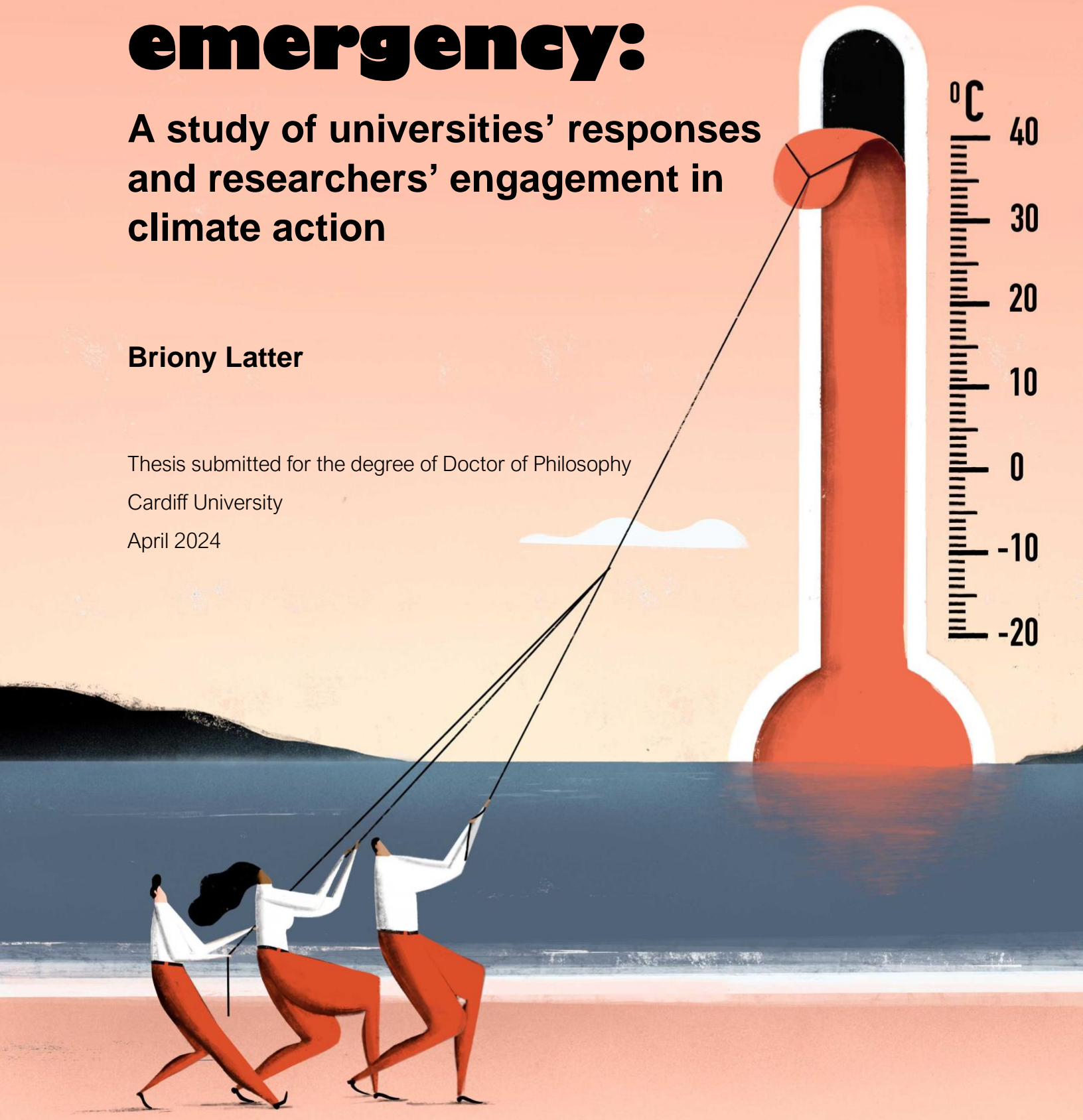


Universities and the climate emergency:

A study of universities' responses
and researchers' engagement in
climate action

Briony Letter

Thesis submitted for the degree of Doctor of Philosophy
Cardiff University
April 2024



Universities and the climate emergency:

A study of universities' responses and researchers' engagement in climate action

Briony Latter

Thesis submitted for the degree of Doctor of Philosophy

Cardiff University

April 2024

Abstract

Climate action is needed across society, though some sectors have greater power and obligation to act than others. It is argued that universities are one such sector. In 2019/20, a group of universities in the United Kingdom (UK) declared climate emergencies and though interest in the relationship between the activities of universities and climate change is growing, the declarations are under researched. There has been little focus on the critical role of researchers, particularly with regards to how university and research culture and practices can enable or inhibit change.

This study addresses these gaps, exploring how universities in the UK are responding to the climate crisis and how researchers, as a key group within these institutions, are implicated in climate action. I focus on universities' climate emergency declarations and the culture and practices within universities that may shape engagement with climate change, using mixed methods research.

Documentary analysis of climate emergency declarations by universities (N=26) showed that they function as promotional statements, as presenting a collective voice, and showing a commitment from the universities to action. Participant observation of working group meetings at a case study university (N=11) showed how the university recognised the scale of the challenge they faced, had a clear focus on action and aimed to model their response on an existing example of best practice from another university. Interviews with university research and sustainability staff and HE sector experts (N=22) and a UK-wide survey of researchers across 127 universities (N=1,853) indicated that university and research culture shapes how researchers engage with climate change. Their engagement is shaped through issues such as workload, power, and pressure to travel. Therefore, the original contribution of this Thesis is that it found that universities are responding to the climate emergency both publicly and internally, and that researchers have a key role in climate action. I conclude with steps that universities and researchers can take to better incorporate climate action into their culture and practices.

Image: Pepe Serra for ArtistsForClimate.org. Modifications made. License: [CC-BY-NC-SA](https://creativecommons.org/licenses/by-nc-sa/4.0/)

Contents

Chapter 1: Introduction.....	1
Chapter 2: Literature review.....	10
Chapter 3: Theory, framework and methods	49
Chapter 4: Documentary analysis and participant observation	107
Chapter 5: Interviews: results.....	149
Chapter 6: Survey: results	165
Chapter 7: Interviews and survey: joint discussion	222
Chapter 8: Overall discussion and conclusions	240
References	271
Appendices	317

Each chapter also has its own contents page.

Figures

Figure 1. Universities in the United Kingdom who responded to the survey (Q2)..... 172

Figure 2. Distribution and amount of survey responses across the UK (Q2)..... 173

Figure 3. Top 15 universities with the highest number of responses (Q2). 174

Figure 4. Content analysis: What do you know about what your university is doing to address climate change? 178

Figure 5. Content analysis: In your view, what opportunities are there for your university to better incorporate climate change into your research practices? 183

Figure 6. Content analysis: As an individual, what actions do you think could take to better incorporate climate change into your research practices?..... 185

Figure 7. Percentage of researchers who say that these items are barriers to them doing more on climate change through their roles in their university (Q21)..... 190

Figure 8. Percentage of researchers who say that these items would incentivise them to do more on climate change through their roles in their university (Q22)..... 193

Figure 9. Universities that have declared climate emergencies (which responded to the survey)..... 197

Figure 10. Percentage of researchers (climate and non-climate) who say they do not know how to address climate change as part of their role in the university. 199

Figure 11. Percentage of researchers (climate and non-climate) who think their subject area is relevant for addressing climate change. 200

Figure 12. Percentage of researchers (climate and non-climate) who think their role is relevant for addressing climate change. 201

Figure 13. Percentage of researchers (climate and non-climate) who think their work has or could have a positive climate impact. 202

Figure 14. Percentage of researchers (climate and non-climate) who are worried about climate change.	203
Figure 15. Differences by subject area in how relevant they think their subject area is for addressing climate change.	205
Figure 16. Differences by subject area in how appropriate they think it is for researchers to advocate for university action on climate change.	207
Figure 17. Percentage of researchers (climate and non-climate) who think that it is appropriate for researchers to advocate for university action on climate change.	208
Figure 18. Types of barriers faced by researchers (climate and non-climate) in doing more on climate change through their role at work.	210
Figure 19. Differences by current position in whether researchers think they know how to address climate change as part of their role in their university.	212
Figure 20. Differences by current position in the level of responsibility that researchers think senior academics/researchers should have for addressing climate change in universities.	213
Figure 21. Differences by current position in the level of responsibility that researchers think research institutions themselves (e.g. universities and colleges) should have.	214
Figure 22. Differences by current position in the number of barriers faced by researchers (in doing more on climate change through their role at work.	216
Figure 23. Types of barriers faced by researchers (by current position) in doing more on climate change through their role at work.	217

Tables

Table 1. Original and adapted dimensions from the HOCH ^N project.	54
Table 2. Overview of research methods and Research Questions.	60
Table 3. UK universities that declared climate emergencies between 17th April 2019 and 17th April 2020.	65
Table 4. Universities that identified working groups or plans in their declarations.	70
Table 5. Comparison of university features for interview sampling.	76
Table 6. Interview participants.	79
Table 7. Number of emails and responses for participant recruitment.	88
Table 8. Distribution of themes across documents.	110
Table 9. Universities that received 1 st Class in the People & Planet University League 2019.	119
Table 10. Professional characteristics of the survey participants.	175
Table 11. Friedman test results (Q14).	188
Table 12. Z-test results for exploratory question 6e.	219
Table 13. Overview of research methods and Research Questions.	243
Table 14. Adapted dimensions of governance and culture from the HOCH ^N project.	244
Table 15. Links to declarations.	319
Table 16. Pairwise comparisons between rank items for question 14.	352
Table 17. Hypotheses and exploratory questions that were grouped for Holm-Bonferroni corrections.	356
Table 18. Skewness results for exploratory question 1.	357
Table 19. Skewness results for hypotheses.	360
Table 20. Skewness results for exploratory questions 2-5.	362

Table 21. Test Statistics from Kruskal-Wallis H test for exploratory question 2.....	363
Table 22. Test Statistics from Kruskal-Wallis H test for exploratory question 3.....	364
Table 23. Skewness results for exploratory question 6.....	366
Table 24. Test Statistics for exploratory question 6b: Whether researchers feel they know how to address climate change as part of their role in the university.	368
Table 25. Test Statistics for exploratory question 6c: Responsibility of senior academics and researchers.....	369
Table 26. Test Statistics for exploratory question 6c: Responsibility of research institutions themselves (e.g. universities and colleges).	369
Table 27. Test Statistics for exploratory question 6e.	371

Acknowledgements

Firstly, I would like to thank everyone who took part in the research – without your involvement, this work would not have been possible. Thank you to those who distributed the survey to your colleagues and those who helped enable the research to take place in various ways.

I am immensely grateful to my supervisors Dr Stuart Capstick and Dr Christina Demski for everything throughout the course of my PhD. Thank you for all your wisdom and support. I would also like to thank Dr Sarah Mander for the help at the earlier stages of my PhD and Dr Steve Westlake for such useful feedback on the final draft of the Thesis. Thanks also to my partner whose support throughout this process has been invaluable.

Publications from the Thesis

I published two journal articles from the work presented in the Thesis prior to submission, in 2021 and 2024. The content has been incorporated throughout relevant chapters and expanded upon:

Latter, B., Demski, C. and Capstick, S. (2024a) 'Wanting to be part of change but feeling overworked and disempowered: Researchers' perceptions of climate action in UK universities', *PLOS Climate*, 3(1), p. e0000322. Available at: <https://doi.org/10.1371/journal.pclm.0000322>.

Latter, B. and Capstick, S. (2021) 'Climate Emergency: UK Universities' Declarations and Their Role in Responding to Climate Change', *Frontiers in Sustainability*, 2, p. 660596. Available at: <https://doi.org/10.3389/frsus.2021.660596>.

I have also published a Briefing Paper based on Latter, Demski, and Capstick (2024a):

Latter, B., Demski, C. and Capstick, S. (2024b) Academic researchers' perceptions of climate action in UK universities: A briefing for the university sector. CAST Briefing Paper 22. Centre for Climate Change and Social Transformations. Available at: <https://cast.ac.uk/wp-content/uploads/2024/01/cast-the-centre-for-climate-change-and-social-transformations-cast-briefing-22-academic-researchers-perceptions-of-climate-action-in-UK-universities.pdf>

Chapter 1

Introduction

Contents

1.1 Context and introduction to research	3
1.2 Key concepts	6
1.3 Research Questions and Objectives	8
1.4 Following chapters.....	8

1.1 Context and introduction to research

My research aimed to explore how universities in the United Kingdom (UK) are currently responding to the climate crisis and how researchers, as a key group within these institutions, are implicated in climate action. I specifically focus on universities' climate emergency declarations and the culture and practices within universities that may shape engagement with climate change.

Climate action is needed across society, though some sectors have greater power and obligation to make an impact than others. It is argued that universities are one such sector. Within this, universities occupy an important space. They are uniquely situated to lead the way in responding to the climate crisis as they are multidisciplinary and collaborative, part of the local and national economy, able to think longer term, and provide space for discussion and debate (Katehi, 2012), as well as having the autonomy (Collini, 2012) and expertise (Boulton and Lucas, 2008) to push for change. This is allied with universities' core functions of research and education (Harayama and Carraz, 2012; Bauer *et al.*, 2018). Universities themselves also believe they have a key role in taking climate action, with Universities UK (n.d.a)—the body that represents 142 institutions across England, Northern Ireland, Scotland and Wales—stating that “universities are critical to tackling the climate emergency”.

There has been increasing interest in sustainability and the Higher Education (HE) sector in the UK (Sterling, Maxey and Luna, 2013) and universities are taking various forms of climate action such as divestment (People & Planet, n.d.). The People & Planet (2023) University League is a key indicator of universities' actions and progress on sustainability and ethical issues. It shows that there is considerable progress universities still need to make to become more sustainable and reduce their emissions, particularly as the majority did not actually meet their sector-wide emissions targets for 2020/2021 (Bryant, 2021). Indeed, it has been suggested that transformational changes are needed in universities for them to address climate change (McGeown and Barry, 2023; Stein, 2023). A change in

Chapter 1: Introduction

universities' engagement with climate change came in 2019 with the widespread declaration of climate emergencies in the UK and globally. This was in the context of prominent climate emergency declarations made by local and national governments, as well as the UK Parliament which was the first national Parliament to do so (Turney, 2019).

Culture change may be needed in universities, as changes to “socioeconomic systems and cultural conventions” are needed to address climate change more broadly to move away from high-carbon living (Capstick *et al.*, 2021, p.75; Moore *et al.*, 2021). There is a need to understand the ways in which universities might lock in or promote high carbon culture and practices and whether there are key areas or groups within them that are particularly important to focus on. It is argued that researchers are a key group in transforming universities given their knowledge and potential ability to create change, as well as the ways in which they collectively comprise the organisation itself (McGeown and Barry, 2023; Stein, 2023; Thierry *et al.*, 2023). However, a greater understanding of researchers' perceptions, engagement and how they relate to research and university culture and practices is needed.

There has been relatively little focus on the role of research culture and practices in relation to climate action within universities, compared to other areas. Research culture and practices are also not areas that universities are being measured against in the People & Planet (2023) University League - research is not currently included as a standalone category in its assessment criteria. While there are some brief mentions of research in other criteria (workers' rights, Education for Sustainable Development, waste and recycling, carbon reduction, water consumption), assessment of sustainable travel policies, which may include flying for research, was only included for the first time in 2023 (*ibid*).

The research for this Thesis is situated in the approach taken by the Centre for Climate Change and Social Transformations (CAST, n.d.) which looks at multiple scales in exploring the “systemic and society-wide transformations” needed for climate action: individual, community, organisation, city/region and national/international. These scales intersect and

Chapter 1: Introduction

influence each other, with different types of action, levels of agency and rates of change occurring across all of them. For example, organisational level action is essential in addressing climate change in ways that are different to government or individual level action (Garnett and Balmford, 2022). In the UK's Sixth Carbon Budget, which details how emissions between 2033-2037 can be addressed, both local and individual level actions are vital, with local authorities playing a key role in this (Marix Evans, 2020). At an individual level, behaviour can be influenced by elements across these different scales - a person's own values, wider social norms, physical access to infrastructure and the ability for political engagement such as citizen's assemblies (Hampton and Whitmarsh, 2023). In this research, I focus on the individual, community and organisational levels, looking at universities as institutions as well as the staff within them.

My research offers investigation into universities and climate action, focusing on climate emergency declarations and research culture and practices. I looked at an emerging phenomenon in real time, with climate emergency declarations being made by universities in the run up to and during the first year of my PhD, offering the opportunity to gain insights into this novel practice. As Ferrari *et al.* (2023) state at the time of their publication, there had been no research into perceptions of universities' climate emergency declarations after they had been made. Additionally, interest in universities and climate action more broadly has grown throughout the course of my PhD, with other work gradually emerging about research culture and climate change at the same time (such as Blanchard *et al.*, 2022; Espinosa *et al.*, 2023; Thierry *et al.*, 2023).

This work clearly addresses gaps in knowledge of these topic areas and given the time sensitive nature of the declarations and how current the topic of universities and climate change is, I made the decision to publish two major pieces of research from the PhD while I was still doing it. The sections of the Thesis where these two papers are incorporated are Chapter 4 (Latter and Capstick, 2021) and Chapter 6 (Latter, Demski and Capstick, 2024). These publications have already had an impact as I have shared them directly with universities and organisations in the wider sector, and the number of views and citations

Chapter 1: Introduction

suggests they are being read and used to support other research (see Chapter 8, section 8.6).

For this research, I take a mixed methods approach—using both qualitative and quantitative research methods—which allows for a more comprehensive understanding of the areas of study (Lieber and Weisner, 2015) as well as being particularly appropriate for understanding organisational culture (Adams, Martin and Boom, 2018). The methods used are documentary analysis, participant observation, interviews and a survey. These cover the organisational level, looking at university outputs and actions at a senior and institution-wide level, and the individual and community levels, looking at researchers as comprising both of these. Additionally, the research is interdisciplinary, with the literature review (Chapter 2) drawing on insights from multiple disciplines.

1.2 Key concepts

There are several key concepts used in this research which are defined below and expanded upon in the literature review (Chapter 2).

Firstly, I will define culture, research culture, research practices, and power. I use the definition of culture from Schein and Schein (2016, p.6) who state that it relates to “a pattern or system of beliefs, values, and behavioral norms that come to be taken for granted as basic assumptions”. I also look at culture and practices within research, which have their own definitions that more specifically relate to this area. Research culture can be a “hazy concept” (Caschi and Adams, 2020, p.1) but there are several definitions that can be drawn on. The Royal Society (n.d.) broadly defines research culture as “the behaviours, values, expectations, attitudes and norms of our research communities”, though Caschi and Adams’ (2020, p.1) definition is how to “evaluate, support and reward quality in research, how we recognise varied contributions to a research activity, and the way we support different career paths”. However, I use the more detailed definition of research culture from Evans (2009, p.9) that closely relates to and builds on the general definition of culture

Chapter 1: Introduction

above: “shared values, assumptions, beliefs, rituals [...] whose central focus is the acceptance and recognition of research practice and output as valued, worthwhile and pre-eminent activity”. Research practices are closely linked to culture and do overlap, but have their own definition as the “organized pursuit and production of knowledge” through which researchers gain “status...power...and rewards [which] are institutionally supported” (Holt, 2013, p.99). The role of power is also important to consider in order to further understand culture and culture change. I define power using the three types outlined by Avelino (2017) which relate to sustainability transitions: reinforcing power (reinforcing or recreating current structures), innovative power (creating new and visible products and resources) and transformative power (creating new structures and organisations).

I also refer to climate change in several ways throughout the Thesis. Given that part of my research is focused on the ‘climate emergency’ declarations by universities, I use this language when referring to the declarations. In the questions for the interviews and survey, I used the more general term ‘climate change’ as while a large majority of people in the UK believe there is a climate emergency (UNDP and University of Oxford, 2021), framing it in this way may appeal to some groups of people more than others (Wang, Corner and Nicholls, 2020). Therefore, throughout the Thesis, I use the terms ‘climate emergency’, ‘climate crisis’ and ‘climate change’ where appropriate.

While recognising that this body of research is for an academic Thesis, I have a strong desire to ensure that there is real-world, practical impact from the work for it to contribute towards greater climate action. In fact, it has been argued that the social sciences needs to focus more on practical solutions and that behavioural climate change research should be relevant and accessible to those able to create change such as policymakers and decision makers in organisations (Nielsen *et al.*, 2024; Watts, 2017). Therefore, while this work contributes to the literature and a greater understanding of the research topics, it culminates in a section of research (survey: Chapters 6 and 7) which have clear practical implications for the UK HE sector.

1.3 Research Questions and Objectives

The overarching Research Question for this Thesis asks **how are UK universities currently responding to the climate emergency and how are their researchers implicated in climate action?** I have two Research Questions (RQs) which sit underneath this, the first of which addresses universities' climate emergency declarations and the second of which addresses researchers and culture.

Research Question 1: How do universities' climate emergency declarations reflect their responses to climate change and what do they mean in practice?

Research Objective 1: Assess the role of universities' climate emergency declarations in their progress towards sustainability.

Research Objective 2: Identify subsequent processes following the climate emergency declarations within universities.

Research Question 2: How does university and research culture shape the way that academic researchers engage with climate change?

Research Objective 3: Identify and explain variability of the engagement of academic researchers on climate change.

Research Objective 4: Explore the factors that encourage and restrict engagement, and how they might be overcome.

1.4 Following chapters

The Thesis is structured as follows. Chapter 2 explores relevant literature in detail before moving into Chapter 3 which outlines the theory, framework and overall methodological approach used for the research, including using mixed methods. The next four chapters contain the empirical research.

Chapter 1: Introduction

Research Question 1 is addressed in Chapter 4 which outlines the results and discussion for the **documentary analysis** and **participant observation**. Research Question 2 is addressed in Chapters 5-7. Chapter 5 contains the results of the **interviews**, while Chapter 6 contains the results for the **survey**. The interviews and survey are discussed jointly in Chapter 7. Finally, Chapter 8 synthesises the findings under a practical framework and draws overall conclusions from the work.

Chapter 2

Literature review

Contents

2.1 Chapter overview	12
2.2 Social transformations and the climate crisis.....	12
2.3 The history and roles of universities	17
2.4 Universities and sustainability	19
2.4.1 Operational climate action	19
2.4.2 Climate action in education and research	23
2.4.3 Becoming a sustainable university	27
2.4.4 Climate emergency declarations and their social context.....	29
2.5 Culture and change	34
2.5.1 Definitions of culture and practices.....	34
2.5.2 How cultures can change.....	37
2.5.3 Areas of culture change	38
2.5.4 Influencing change within universities	41
2.5.5 Power and culture	43
2.5.6 Researchers' perceptions and engagement.....	44
2.6 Next steps.....	47

2.1 Chapter overview

The first chapter provided some initial context about universities and climate action, including their progress to date, and why universities and their researchers are important to focus on. I outlined the key concepts used in the Thesis and stated the overarching Research Question and two detailed Research Questions that this research explores.

This chapter begins by providing an overview of the social transformations required to address the climate crisis, including where responsibility for action lies and the different scales at which this needs to be taken, for example, at individual and organisational levels (section 2.2). I then outline the history and roles of universities within society to provide greater context about how they came to be as they are now (section 2.3). Next, I move on to explore the literature surrounding universities and sustainability, exploring their action and inaction across different areas of their roles, how they may need to change, and finally how they have recently communicated publicly about climate change using climate emergency declarations (section 2.4). I conclude the literature review by looking at culture and change within universities and organisations more broadly, where I also expand on the key concepts that I use in the research. This section includes how culture can change, related issues such as governance and power, and what is currently known about researchers' perceptions and knowledge (section 2.5).

2.2 Social transformations and the climate crisis

Climate change is an increasingly urgent issue with “widespread, rapid, and intensifying” impacts being felt globally (IPCC, 2021). For example, many African countries have recently experienced extreme weather events (often un- or under-reported in the minority world), Europe is the continent with the highest temperature increase over the past 30 years, and Asia is feeling the impact of flooding, storms and glacier retreat (Dunne, 2022; World Meteorological Organization, 2022a; World Meteorological Organization, 2022b). Yet despite the historic Paris Agreement between

Chapter 2: Literature review

all countries which aims to limit global temperature increase to 1.5°C above pre-industrial levels, the world's current climate policies would mean “a death sentence for vulnerable countries” (Guterres, 2023; United Nations Framework Convention on Climate Change, 2016). These impacts and limited progress make it clear that an urgent increase in climate mitigation and adaptation is needed. Changes will be required across a huge range of sectors, with global greenhouse gas emissions mainly coming from energy use in buildings, industry and transport (73.2%) and agriculture, forestry and land use (18.4%), with smaller amounts from industry and waste (8.4%; Ritchie *et al.*, 2020).

Climate action is broad in scope, and here I define which sector I will be focusing on in this Thesis. The actions required to mitigate and adapt to climate change are substantial (IPCC, 2023): while much responsibility lies with industry and government, including for example addressing the role and activities of fossil fuel companies (Grasso and Heede, 2023), a cross-societal response is needed that connects personal action with broader systemic and cultural change (Capstick *et al.*, 2021). Many individuals, groups, and both public and private organisations are addressing climate change, though one sector that plays a unique and important role in society and in climate action is Higher Education (HE), particularly universities. For this research, I will be focusing on universities at an organisational level and the individuals within them (who collectively also form a community) and how they are connected in relation to climate action. Firstly, I will provide an overview of the transformations required to address the climate crisis and the different actors involved in this.

The question of who has responsibility for greenhouse gas emissions is one which can be addressed from different perspectives, including the concept of historic responsibility for action and how this is viewed in the context of current progress in cutting emissions. Responsibility can certainly be placed on the fossil fuel industry, with only 20 companies responsible for more than a third of emissions since 1965 (Taylor and Watts, 2019). When looking at a country level from a climate justice perspective, it is argued that historical emissions should be considered given the role of the industrial revolution in climate change (Bruno *et al.*, 1999; Evans, 2021). In 2019, the UK was the 22nd

Chapter 2: Literature review

highest ranked country in the world for greenhouse gas emissions (World Resources Institute, 2022), though when accounting for historical data (from 1850-2021), it is the eighth largest emitter (Evans, 2021). These emissions need to be reduced by a huge amount. The UK has a legally binding commitment to reduce its emissions by 100% by 2050 compared to 1990 levels, though this can include offsetting (UK Government, 2019), and has successfully met its Third 'Carbon Budget' (regular targets for emissions reductions) from 2018-22 (Climate Change Committee, 2024). However, the current pace of emissions reductions in most sectors needs to increase fourfold (Climate Change Committee, 2023a). The massive reduction needed in the next 25 years and the increase in the pace of this indicates that there will need to be significant changes outside the scope of what has already been seen. While climate action can be differentiated in a variety of ways, a social transformation such as that needed to address the crisis requires change across different scales and sites.

Transformations to address the climate crisis need to occur across society and at multiple scales. While the scope of climate action needed is often referred to as a transformation, the term lacks a clear definition, though it has been suggested that it should be defined as changes that are “broad, deep and rapid [...] which involves a fundamental shift in the trajectory of societal change away from patterns of development that normalize high-carbon ways of living” (Moore *et al.*, 2021, p.18). While this definition refers specifically to mitigation, not adaptation, it emphasises the scope of change that is needed and the significant impact this is likely to have on people’s lives. Transformations include integrated action across sectors and scales from individual and local to national and international (IPCC, 2023), covering both system change and behaviour change, including cultural norms (Capstick *et al.*, 2021). For example, overcoming the dominant ‘car culture’ in society where cars represent individualism and freedom as well as being a mode of transport (Dennis and Urry, 2009). Despite the recognition of this breadth of action, it was only recently in 2022 that Working Group III of the IPCC first included a chapter about consumption in their reports, which are key overviews of the state of current climate science (Whitmarsh *et al.*, 2022). Furthermore, while low-carbon technologies do play an important role in reducing emissions, societal or behavioural changes could account for up to 62% of the

Chapter 2: Literature review

changes needed to address climate change in the UK (Climate Change Committee, 2019). This highlights the importance of understanding how societal changes can occur and what actors are part of making this happen.

The societal and behavioural changes that encompass this potential transformation require a broad range of actions, yet some people have a much greater impact than others as well as different capacities to act. For example, the richest 10% of people in the world are responsible for more than half of the cumulative carbon emissions (Gore, Alestig and Ratcliff, 2020). Given the power and resources this group of people have, this links to considerations not only of who is deemed responsible for causing and addressing climate change, but also who is able to act. While the UK public think that the government has the greatest responsibility for addressing climate change (34%), followed by the general public (26%) then businesses (19%; Department for Business, Energy & Industrial Strategy, 2021), people feel unable to influence key decision makers and are unsure what they can do themselves to take climate action (Baeck, 2023). Additionally, not everyone is similarly able to act due to demographic, cultural, material and spatial factors, for example, poverty, lack of access to infrastructure or being a member of a disadvantaged group (Hampton and Whitmarsh, 2023). This further links to ideas of fairness, an important consideration as climate action can be perceived differently by different groups of people and there is a need for people to feel they have been “genuinely listened to” with regards to how to take climate action (Webster, Powell and Corner, 2022, p.5). This demonstrates how climate action and perceptions of it can differ, highlighting the importance of proportional action.

While people who have large carbon footprints can clearly have a big impact if they change their actions, individual action is needed more broadly. While recognising that the idea of a personal carbon footprint originally came from oil and gas company BP (Supran and Oreskes, 2021), the average lifestyle carbon footprint in the UK does need to be reduced by a huge 92% by 2050 to stay within 1.5°C (Akenji *et al.*, 2021). Yet the extent to which people report and understand behaviour change varies. Many people in the UK report undertaking climate-friendly behaviours in their everyday life, such as walking or cycling instead of a car (49%) or minimising energy use (80%; Department

Chapter 2: Literature review

for Energy Security and Net Zero, 2023). Of the behaviours provided, people thought that the biggest impact on climate change would be from walking/cycling instead of using a car, installing low carbon heating systems and reducing energy use (ibid). However, other research found that despite 71% of people in Great Britain saying they understand what climate action they need to take, globally the actions that people think are the most impactful are actually the least, and vice versa (Ipsos, 2021). For example, the British public overestimate the impact of recycling and replacing lightbulbs, and underestimate the impact of not having a car and eating a plant-based diet (ibid). There is clearly a mixed understanding of the effectiveness of different climate actions at an individual level which suggests that different ways of communicating about the issue may be needed.

Individual lifestyle changes are important, yet broader action is also essential, for example by governments. At a national level, governments cooperate on global emissions reductions (United Nations Climate Change, n.d.) and can have legally binding emissions reductions targets (UK Government, 2019). Governments may also have a role in sharing knowledge about how people can take climate action (Environment and Climate Change Committee, 2022), though as there is very low trust in politicians in Britain (Ipsos, 2023) this role may be limited. However, governments are far from the only actors that play a part in tackling climate change – action by regions, cities and organisations can also massively reduce emissions (Kuramochi *et al.*, 2020) and it is on organisations that I now focus, specifically universities.

Organisations have an important role in climate action both externally given their power and influence as well as internally with the ability to take fast and ambitious action that can be less restricted by factors affecting governments, such as electability (Garnett and Balmford, 2022). They can also influence each other, for example, how non-governmental organisations (NGOs) have campaigned to pressure businesses to make their practices more sustainable (ibid). Evidence also shows that there is some concern and action within organisations though this may not be widespread. Less than half (39%) of businesses in the UK are very or somewhat concerned about how climate change will impact them and almost a third (30%) say they are taking no action to

reduce their carbon emissions – though this has improved from the previous year where just under half were taking no action (Office for National Statistics, 2023b). Public pressure and credibility are some of the drivers that have been shown to influence climate change action within organisations (Okereke, 2007), as well as stakeholder pressure from environmental groups (Littlewood *et al.*, 2018) and regulations (Averchenkova *et al.*, 2016). Therefore, the potential increase in public awareness and engagement around climate change (Thackeray *et al.*, 2020) may have further impact and push organisations to act. The type of organisation that I will now focus on is universities, providing wider context about their history and roles before discussing their climate impact and actions.

2.3 The history and roles of universities

The history of universities provides context about how they came to be as they are now. This background about how they have developed is required to understand their current action on sustainability and climate change because it provides insight into what universities' roles are and therefore the extent to which climate action could be part of this. Universities originated in the Middle Ages, the oldest still in existence in Morocco, drawing a minority elite of men from far away as well as locally (Caine, 1969; Guinness World Records, n.d.). Modern universities came about in the 1800s when research became incorporated as one of their key purposes (Collini, 2012), where previously they were more centres of learning rather than places of discovery or original ideas (Caine, 1969). Since the 1800s, the number of universities has increased dramatically and in the 1900s the number of young people attending also rose (Valero and Van Reenen, 2016). Governments across the world are now reliant upon and looking to expand HE (Wotherspoon, 2012). This demonstrates how universities have developed over time and are now an important part of society.

In the UK alone, there are 161 HE institutions (Amber *et al.*, 2020), some amongst the oldest in the world and others that are more recently established, such as polytechnic institutions which offered vocational courses before being granted university status in 1992 (Emms, 2022). In 1994, the Russell Group was formed – a group of research-

Chapter 2: Literature review

intensive universities. Some research shows that most Russell Group universities are similar to other pre-1992 universities, having “higher levels of research activity, greater wealth, more academically successful and socioeconomically advantaged student intakes” than those which are post-1992 (Boliver, 2015, p.608). However, the universities of Oxford and Cambridge sit outside this in an “elite tier” (ibid, p.608).

There are a broad range of definitions for universities, but in a global context they are defined as institutions which undertake research, have a student body and award degrees (Birtwistle, 2003), though universities in the UK must specifically have either a Royal Charter or Articles of Government and an Instrument of Government (The Privy Council Office, n.d.). However, defining a university is more than simply the use of the name – they have several key roles.

Universities have multiple roles in society, though education and research are seen as their central functions. However, what these encompass can change over time. A university was defined in the 1800s as an institution focused on teaching knowledge (Newman, 1996), though more recently it has been argued that learning within universities is a two-way process between teachers and students (Livesey, 2008). In addition, Boulton and Lucas (2008) argue that the creation, as well as the distribution, of knowledge is a key role that universities have, which is for the benefit of society. Yet the roles of universities are not always clearly defined; what constitutes education and research is not fixed and may change as universities themselves change over time. This includes changing ideas about knowledge, what is seen as useful in society (Brew, 1999), new technologies and widening access to education (Krause, 2022). There are also many secondary roles that universities have. This includes an important civic role as “anchor organisations” working locally with industry and civil society (Facer, 2020, p.25) and as major contributors to the economy and society more broadly (Atherton, Lewis and Bolton, 2023; Boulton and Lucas, 2008; Harayama and Carraz, 2012). As well as being a large employer, this wider impact includes sharing and creating knowledge and skills (Uyarra, 2010).

Chapter 2: Literature review

While universities' contribution to wider society is certainly not just economic (Livesey, 2008) as is evident above, understanding their economic role and how they are funded offers further insights into how they have changed over time and what implications this may have. With over 2.8 million students and over 230,000 staff in UK Higher Education Institutions (HEIs) in 2021-22 (HESA, 2022a; HESA, 2022b), universities employ and educate a significant number of people as well as being an essential part of the UK economy (Oxford Economics, 2017), demonstrating that they are an important and influential force in the UK. They provide economic growth at both an individual and country level, increased innovation and are even associated, over a long time frame, with pro-democratic views (Valero and Van Reenen, 2016). This economic role is recognised (though in a somewhat narrow way) by the public, who believe that the role of universities is mostly to increase the chances of employment (Britain Thinks, 2018). When universities expanded in Britain in the 1950s and 1960s, higher education became available to a greater number of people (Faulkner, 2011). Accompanying this was an increased reliance on government funding, an increase in student numbers and government financial support to them, and an expansion in the amount and different types of knowledge within universities (Caine, 1969).

The way that universities in the UK are funded is changing and this has implications for what kind of organisations they become. Universities receive income from collaborating with businesses (Universities UK, 2016), ties which are becoming more common (Uyarra, 2010) and more important because of dwindling public funding (Bailey, 2011). Fenton (2011) argues that this decrease in state funding, which largely impacts the social sciences, arts and humanities and was accompanied by large increases in student fees, leads to fundamental changes as it shifts universities from being a public good towards a provider of commercial products and services within a market. Only 26% of universities' income came from the UK government in 2014-15 (Universities UK, 2016), demonstrating that they are reliant mainly on other sources. Despite Collini's (2012) argument that universities should work for the public good rather than to generate income, this may not always be practically possible given the trade-offs for public expenditure. Therefore, the less funding that comes from the government, the more universities become private institutions. This is reflected in public opinion, with

Chapter 2: Literature review

people believing that universities are becoming commercial and profit-driven (Britain Thinks, 2018, p.10). These funding changes may shift who decides what the roles of universities are and how they might change, for example being influenced by where most of their income comes from. How this would impact on climate action is unknown but may be important to consider in research about universities and climate change with regards to how this aligns to universities' roles.

Universities are seen to be different from other organisations as the individuals within them have an additional degree of freedom. Internally they can offer a safe space for people to push limits, reflect and think (Brennan, King and Lebeau, 2004). Externally, autonomy is seen as a key value (Bleiklie, Enders and Lepori, 2017; Collini, 2012) and academics are broadly free to advocate and be involved in public engagement as individuals, which regularly takes place without official consent or their universities' awareness (Boulton and Lucas, 2008). The ability to critique those in power, either the government, university funders or those in university management, is also seen as a key part of the spirit of universities and how they can benefit society (ibid). This freedom means that it may be possible for academics to advocate for climate action both within and outside of the HE context. An example of this can be seen within the subject of energy justice, where academics have advocated for changing their discipline to practice what they preach in terms of individual climate responsibility and rethinking the way they conduct research (Jenkins *et al.*, 2020).

There are differing views about whether universities can bring about change or if they are simply reactive to change from elsewhere, as well as how they can influence change. Caine (1969) argues that history suggests British universities have only integrated new social ideas when they become mainstream rather than being originators of ideas themselves. On the contrary, Boulton and Lucas (2008) argue that radical ideas and developments within society *can* originate in these institutions. Furthermore, Brennan *et al.* (2004, p.16) argue that they can press for and enable “new cultural values”, playing an important role in social transformations. In recent years, many have argued—including universities themselves (Universities UK, n.d.a)—that universities can and should take climate action and play an essential part in doing so.

Chapter 2: Literature review

These actions cover the multiple roles they have as well as their own campus operations (Adefila *et al.*, 2021; Facer, 2020; McCowan, 2020). Universities and further education colleges represent approximately 2.3% of the UK's carbon emissions (Priestley Centre for Climate Futures, 2023) which, alongside their important platform as thought leaders, gives them substantial potential to influence wider action. Although universities may not directly cause societal transformations regarding climate change, they should arguably be part of it, not least because they themselves contribute to climate change.

Climate change mitigation needs to be taken by the full breadth of society: no sector will be exempt from having to make relevant changes, though some will have more impact than others. Universities are major institutions which are already intertwined with society in multiple ways and therefore it can be argued that they should be involved in issues that have far-reaching impacts on society, such as climate change. However, considering for example that Universities UK (2016, p.14) state that the long-term sustainability of universities relies on “their continued ability to attract sufficient numbers of non-EU students” when at the same time greenhouse gas emissions from international student travel are rising (Shields, 2019), it will be challenging for universities to take meaningful action on climate change with these, amongst other, competing pressures. Brennan *et al.* (2004) suggest it should be accepted that universities have roles which are numerous and sometimes contradictory. However, that does not mean that some of these contradictions should not be acknowledged or acted upon, particularly where they could have a significant impact. The next section explores how universities have acted on climate change and broader sustainability issues so far, including how this has been addressed in education and research, the changes they may need to make to become more sustainable and the recent initiative of declaring ‘climate emergencies’.

2.4 Universities and sustainability

2.4.1 Operational climate action

Chapter 2: Literature review

As large organisations, universities have a broad range of environmental impacts and are taking action to address these. These impacts range from the energy sources they use, water consumption and the provision of sustainable food to the amount of waste produced and how much of it is recycled (People & Planet, 2019). Universities are already taking action to mitigate their climate impacts and become more sustainable, mainly around having renewable energy systems, sustainable building design and certification, sustainable water management, recycling, provision of cycling facilities and the creation of green spaces (Amaral *et al.*, 2020). A prominent example of universities' climate action in recent years that student pressure has played a key role in is divestment from fossil fuels, with over 100 UK universities having divested (or that have stated intentions to divest; People & Planet, n.d.). However, fossil fuel companies are financially supporting UK universities with millions of pounds of funding, including for research and tuition fees (Colbert, 2023). How universities address these issues are subject to several different ways of measurement to understand their impact.

Since the early 2000s, there has been increasing interest in sustainability and the HE sector in the UK (Sterling, Maxey and Luna, 2013), alongside university action being monitored and ranked by the People & Planet (2019) University League. The University League is a league table which ranks institutions each year based on the action they are taking across numerous ethical and sustainability categories (ibid). The main way that universities, and organisations more broadly, measure their progress on climate impacts is through their greenhouse gas emissions. This is often reported by organisations using three distinct standards known as Scopes 1, 2 and 3. Scope 1 consists of direct greenhouse gas emissions from “owned or controlled” sources, scope 2 covers indirect greenhouse gas emissions from purchased energy, and scope 3 covers all other indirect emissions such as transport not controlled by the organisation and other purchased materials (Greenhouse Gas Protocol, n.d.). Scope 3 emissions can account for a large majority (70-90%) of an organisation's emissions (Carbon Trust, 2023) and can therefore be a key area to focus on. There are already some statutory reporting requirements around energy use in the UK, though from 2024 universities will (voluntarily) report their Scope 1, 2 and 3 emissions to the Department of Education using a new Standardised Carbon Emissions Framework (EAUC, n.d.a). These

Chapter 2: Literature review

frameworks are therefore key ways in which to monitor and compare universities' progress towards becoming more sustainable.

The size and influence of universities suggests that they could have a significant impact on climate change if they were to act. As large institutions, it could be argued that it is simply part of normal corporate responsibility for them to act on climate change and broader sustainability issues. Corporate Social Responsibility (CSR) is commonplace in the UK, with more than 90% of the 100 biggest companies in the UK reporting on CSR, of which environmental issues are a key element (Visser and Tolhurst, 2017). This is also common in universities, with the top 10 world-leading institutions (which include four in the UK) engaging with CSR including environmental issues (Nejati *et al.*, 2011). As well as internally addressing CSR, universities also shape thinking about organisational management and leadership. Universities could have influence in this field by both addressing sustainability issues within their own organisations as well as sharing and shaping knowledge through research and teaching. CSR has been a topic of academic research for many years, for example, the Cambridge Institute for Sustainability Leadership has been operating for over thirty years and is the oldest institution in the UK related to learning about corporate responsibility (Visser and Tolhurst, 2017). This is also an increasingly visible issue, with CSR become more prominent within management education across universities in Europe (*ibid*), demonstrating that it is becoming more important to address for businesses. In addition to the aforementioned ways in which universities are approaching their environmental impacts, it is important to consider how they are doing so in relation to education and research.

2.4.2 Climate action in education and research

Given that education and research are the two primary recognised roles of universities, it is important to understand if and how they relate to climate action within the HE sector. There is a recognition that it is important to incorporate climate change into university education, often referred to as Education for Sustainable Development (ESD). A global survey of universities including some in the UK found that 65% have courses

Chapter 2: Literature review

about sustainable development, including at graduate level, though in more than half of institutions, less than 10% of courses include climate change as a topic (Toman, van't Land and Harris, 2023). There is some progress in incorporating the topic into education, with a new college in Wales founded in response to the climate crisis which specifically focuses on sustainable futures (Black Mountains College, n.d.). However, the inclusion of ESD in UK universities is currently limited (Price *et al.*, 2021) despite students wanting—and expecting—to be taught about the climate crisis (Students Organising for Sustainability, 2023a; Tatum, 2020). Similarly, research in the United States and Norway found that college and university students want to take climate action but find it difficult to know how to do so in a meaningful way (Leichenko, Gram-Hanssen and O'Brien, 2022). There are also insights into what students think about university climate action. For example, most UK students think that universities should invest in solutions to environmental and social issues (Students Organising for Sustainability, 2023b) and research in Brazil, Fiji and Kenya shows that while students have high expectations of their universities with regards to climate action, their satisfaction with this tends to be low (Rolleston *et al.*, 2023). Student concern and involvement in climate action is not limited to their own education - school and university students have been at the forefront of civil action on climate change in recent years (Thackeray *et al.*, 2020).

However, there may also be challenges for those doing the teaching. Owens *et al.* (2023) suggest that there are multiple barriers to teaching about the climate crisis, comprising of personal, material and social factors such as norms, policies and cultures, which may also vary between demographics and professional characteristics. This covers, for example, the extent to which the topic is seen as important and acted upon by senior management as well as potential uncertainty about how to integrate it into their teaching (*ibid*). Sustainability and climate change are clearly areas that students care about and are interested in, and to a certain extent are being addressed in university education, but the literature suggests that this may not be widespread and there are barriers for implementing it.

Chapter 2: Literature review

In addition to education, research plays a key role in university climate action. There are many sustainability-focused research centres and themes in universities (White, 2013), with research and innovation seen as important for producing relevant knowledge to address climate change (Universities UK, 2023). Additionally, research is seen as important to share with decision-makers such as those at the 26th United Nations climate change conference (COP26) in Glasgow as well as influencing local, regional and national level decision-making (ibid). In fact, the thousands of scientific journal articles produced by researchers are the basis of the reports produced by the IPCC (n.d.) which underpin the global response to climate change. Yet a systematic review shows a lack of information about how universities are taking climate action in relation to their research role, including research processes and practices (Nussey *et al.*, 2023). Also, the content of climate change research may not align with universities' actions to address the crisis. O'Neill and Sinden (2021, p.36) suggest that "universities as spaces of research are [...] distinct from universities as spaces of sustainability practice" because the actions that universities take are disconnected from the sometimes radical research within them. There is evidently valuable climate change research being produced by universities and used in a global context, but there should also be consideration around *how* research more broadly is practised and the climate impacts it may have.

Where research has been highlighted by universities, this is often regarding the content of research rather than any climate impacts from how research is conducted or practised (Universities UK, 2023). The ways in which research is practised in universities is perhaps less visible than other areas which may be acted upon as part of the response to climate change, such as changes in the food that is sold on campus and the use of different energy sources such as the installation of solar panels. It is argued that it is also spoken about less, and there is a need to collectively discuss how climate action can be taken across universities (Thierry *et al.*, 2023). Even compared to other non-visible issues such as divestment from fossil fuels, which has had a lot of publicity in recent years (People & Planet, n.d.), the way that research is practised and the culture surrounding it is spoken about less. This will be explored in section 2.5. Furthermore, universities tend to be thought of by the general public in terms of

Chapter 2: Literature review

undergraduate students (Britain Thinks, 2018), which suggests that education rather than research may be a more visible aspect generally. Research staff are therefore an important group to understand in relation to climate action in universities and will be a key focus for this Thesis.

The actions that researchers take in relation to climate change can have an impact outside of their workplace. Given the high trust in scientists both in general and as trusted messengers on climate change (Department for Energy Security and Net Zero, 2023; Ipsos, 2023), the work of Attari, Krantz and Weber (2016; 2019) into researchers' carbon footprints and credibility in the USA is highly relevant. The authors found that researchers' carbon footprints can impact their credibility with the public (a high carbon footprint makes them less credible) and this also impacts people's intentions around their own energy consumption (Attari, Krantz and Weber, 2016). Their later study into the effects of researchers' home energy use on the level of support a person will give a policy that has been advocated for by the researcher had similar findings, with researchers' energy use impacting their credibility, though this credibility can be regained through positive behaviour change (Attari, Krantz and Weber, 2019). This indicates that it is not only the activity of researchers in a work context that is important to consider, but also how their personal choices may impact on how others view them. Furthermore, it is argued that if universities change in substantial ways to become sustainable, the research within them "will be transformative on all levels: personally, professionally, institutionally and societally" (Sterling and Maxey, 2013, p.313), indicating perhaps that researchers' personal actions may change as a result of the approach of their institution. Researchers' actions in their personal lives may impact on the perceptions of others, though researchers can also aim to change how their own institutions approach the climate crisis.

Whether universities or the academics within them should be advocating is a contested matter. Advocacy is defined as behaviours that involve "listening, amplifying, and promoting an issue, cause or organization [that are] low-cost or low-risk", whereas activism is defined as behaviours that are "more direct, committed, and vigorous [that are] high-cost and high-risk" (McKeever *et al.*, 2023, p.17) which also highlight an issue

Chapter 2: Literature review

in a way that attracts the public's attention (Parsons, 2016). In their literature review of scientific advocacy, Nelson and Vucetich (2009) argue that taking a neutral standpoint on negative environmental impacts guarantees that these negative impacts will continue, in other words, that deciding not to advocate can produce harm. However, others argue that advocacy around climate change within academia continues to be up for debate as to whether it is appropriate (Boykoff and Oonk, 2018). Therefore, is important to acknowledge that there may currently be competing views about academic advocacy and what this entails.

Whilst it can be argued that it is necessary for academics to advocate (some examples of how they are doing this are outlined in section 2.5.4), there can be risks involved such as lack of support by their institutions if they receive criticism for their actions (Foote, Krogman and Spence, 2009). Nevertheless, taking in to account the severity of the impacts of climate change, it could be argued that now is an important time to advocate for action from those who are willing to do so. Additionally, people in Britain have high trust in scientists to tell the truth in general (74%) – not as high as nurses who at 88% are the most trusted profession but dramatically higher than politicians who are the least trusted at 9% (Ipsos, 2023). When looking specifically at sources of information about climate change, this is even higher in the UK, with 86% trusting scientists working in universities (Department for Energy Security and Net Zero, 2023). Whether scientists should be seen as neutral and independent or whether it is acceptable for them to advocate for certain policies and be involved in activism may be changing, with many taking part in climate protests in recent years (Goldberg, 2022) and being more outspoken about the issue (Ripple *et al.*, 2019). Academics may have an important role in pushing for climate action in their institutions, though there appears to be a long way to go for universities to become truly sustainable and achieve the types of changes at a transformational level that some argue are needed.

2.4.3 Becoming a sustainable university

While universities understand that they have a valuable role in addressing sustainability within wider society, they themselves have not yet become sustainable (Ralph and

Chapter 2: Literature review

Stubbs, 2014). Some of the ways in which this could be addressed are ensuring that sustainability is integrated across all aspects of universities, as well as having targeted funding, training for leadership and staff, and policy support from government (ibid). In Hoolohan *et al.*'s (2021) work exploring high-carbon aspects of universities' operations, they found that while UK universities do recognise how they perpetuate unsustainable practices such as flying and high-carbon diets, their targets and plans to address these are minimal. In recent years, sustainability targets have increased but this has not necessarily led to sufficient action. There was a noticeable increase in 2022 in the amount of universities' net zero targets and the communication of their sustainability actions compared to the previous year, with 96% of Universities UK members having publicly available emissions reduction strategies (Whiteley, 2022). However, the majority did not actually meet their sector-wide targets for 2020/2021 (Bryant, 2021) and a survey of Higher and Further Education (FE) institutions in the UK found that almost half are not confident or are unsure about whether they will meet their next round of emissions reductions targets from the UK government (Jamdar *et al.*, n.d.).

Universities have an important role in climate action but may need to make significant changes to how they function in order to do so effectively. While it is contested in the literature whether universities can directly bring about change, Katehi (2012) argues that they are unique in being able to lead the way in sustainability and have a responsibility to act as they are multidisciplinary and collaborative, part of the economy, not bound by the short-term incentives of politics and are seen as a neutral space for discussion. In recent years, there have been many others who have further argued that universities have an essential role in addressing sustainability issues (Bauer *et al.*, 2018; Harayama and Carraz, 2012; Sedlacek, 2013). It is this potential role that I explore in this Thesis. Sterling (2013) argues that sustainability and working towards a sustainable future need to be more deeply embedded within universities, even becoming part of their purpose, as tackling sustainability as an 'add-on' may be a suitable first step but is not enough to fully address the issue. This perspective indicates that rather than being optional or an afterthought, climate action should be one of their core roles.

Chapter 2: Literature review

Exactly how universities could take on this role may differ, and some academics argue that transformational change is required. Only a few years ago, the amount of research into sustainability transitions in HEIs was minimal (Bien and Sassen, 2020), yet there are now some who are calling for a transformation of the sector. While McGeown and Barry (2023, p.1) perceive universities as currently contributing to preventing action on the climate and ecological crisis, they also argue that they could be “inherently transformative” given the resources and influence they wield. To be part of a wider social transformation, an internal transformation is required which involves changing academic practices around research, education and outreach, with academics themselves involved in creating change (ibid). Others have offered further guidance on what this change could look like. Stein (2023) suggests that researchers have a role in sustainability action in three increasingly challenging approaches – ‘mainstream’, ‘critical’ and ‘beyond’ sustainability. Mainstream sustainability relates to knowledge creation and dissemination, with critical sustainability building on this to address issues of power and inclusion, and finally beyond sustainability relates to being held accountable to those most impacted by climate change and having different priorities, for example, “collaboration over competition” (ibid, p.11). This demonstrates the huge changes that universities and those within them may need to make in order to address the climate crisis.

2.4.4 Climate emergency declarations and their social context

The literature suggests that although progress on climate action in universities has been made, it is not yet sufficient. It is argued that progress has been slow because there is insufficient senior leadership and support, limited availability of people to work on these issues and a limited understanding of climate change and sustainability (Ralph and Stubbs, 2014). However, there are indications that this is changing, with several universities in the UK and internationally stating their support for urgent action on climate change. One development that happened during 2019 was the declaration of a climate emergency by many universities in the UK and globally – an area that will be a focus of the Thesis.

Chapter 2: Literature review

A 'climate emergency' is defined as "a situation in which urgent action is required to reduce or halt climate change and avoid potentially irreversible environmental damage resulting from it" (Oxford University Press, 2019). As climate change has become more prominent, the term is increasingly being used (Carrington, 2019) and is one that the public are aware of – in the UK, 81% of people believe there is a climate emergency (UNDP and University of Oxford, 2021). It is also being used as a declaration to acknowledge the severity of climate change. In 2019, when this research project started, there were 129 academic papers published that used the term 'climate emergency'; in 2022, there were 862 (Osaka, 2023). The increasing use of this language emphasises the seriousness of climate change but is also perhaps a reflection of how the language is being used in society, for example through climate emergency declarations.

Announcing that something is an emergency suggests that the subject in question is serious and needs fast and substantial action. However, there is some scepticism about the declarations. Asayama *et al.* (2019) argue that the climate emergency declarations are too hasty but recognise that the setting of a climate deadline makes sense in terms of being helpful when communicating with people about the issue. This suggests that some declarations may be announced without due thought to the work that is required afterwards. There may also be implications for how policymakers and the broader public engage with the topic if it is framed in this way. Using an emergency framing has been criticised due to its "anti-democratic tendency and potential for technocratic governing" yet there is considerable variation in how it is used and interpreted in policy (McHugh, Lemos and Morrison, 2021, p.11). When exploring the impact on the public, some research has found that using the term climate emergency did not alter people's engagement with climate change but it did affect their perceptions of how newsworthy a story was (Feldman and Hart, 2021). Overall, there appears to be mixed evidence and viewpoints about whether framing climate change as an emergency is useful and what impact this may have.

Chapter 2: Literature review

The most prominent climate emergency declarations have been made by local and national governments. The first council in the world to declare a climate emergency was in Australia in 2016 (Kwai, 2019), though it took until 2019 for this to expand significantly, when the greatest number of declarations took place globally (Centre for Climate Safety, cedamia and Vote Climate Australia, 2023). Most government climate emergency declarations across the world were made in 2019 (1,340), with only 180 made in the three years prior, and 799 made between 2020 and 2022 (ibid). The year 2019 also saw the practice of declaring a climate emergency come to the fore in the UK, when the UK Parliament declared a climate emergency in May that year, becoming the first national Parliament to do so (Turney, 2019). This declaration was in fact a demand from prominent campaign group Extinction Rebellion who were pushing for greater climate action at the time (Farand, 2019). This demonstrates that there was a huge interest in the climate emergency during this period, though at the time it was unknown how long this would be sustained for.

In recent years there have been changes in how much attention climate change has been given in the public sphere, for example, in the media. While globally the number of academic publications about climate change increased dramatically from the early 2000s to 2014 (McSweeney, 2015), in the UK the prominence of climate change has tended to fluctuate in newspaper coverage (Saunders, Grasso and Hedges, 2018). Yet, over the last few years there have been active measures by the media to report more on the topic. Since late 2018 there has been a sustained high level of publicity around climate change in the UK, with extensive media coverage of the IPCC's (2018) 1.5°C special report, Sir David Attenborough's television programme *Climate Change – The Facts* (BBC, 2019), and a commitment from many newspapers, magazines and institutions around the world, including from the UK, to increase their climate change coverage (Covering Climate Now, n.d.). This could suggest that these are responses to the urgency of climate change but also to public opinion.

UK newspaper coverage of climate change was high throughout 2019, was at its highest ever (since data collection started in 2000) around the time of COP26 and was also high for several months in 2022 (Boykoff *et al.*, 2023). The UK's record breaking

Chapter 2: Literature review

40°C heatwave in summer 2022 was also reported extensively (Dunne *et al.*, 2022). Behind the scenes, the increased coverage is viewed positively, with the majority of media industry leaders (from 53 countries including the UK) rating their coverage of climate change as 'good', and many having created a climate team to raise the profile of the issue and put measures in place to ensure climate is considered across all topic areas (49% and 44% respectively; Newman, 2023).

As well as increased media coverage, there has been high-profile activism and events. For example, (global) school strikes inspired by activist Greta Thunberg and numerous disruptive protests by Extinction Rebellion, as well as a UK-wide citizens' climate assembly and COP26. Research in 2023 found that 54% of the online UK population said they saw or heard climate change news or information within the last week (Ejaz, Mukherjee and Fletcher, 2023), reflecting the prominence of the topic in the media in recent years. However, it is important to consider whether this increased coverage and activity aligns with the views of the public, particularly given potential competing priorities such as the cost of living crisis, and a few years earlier, the Covid-19 pandemic.

Despite the COVID-19 pandemic which could have impacted climate action and public opinion, research in 2020 showed that 66% of people in Great Britain believed that climate change was as critical as COVID-19 in the long term (Ipsos, 2020). Also, climate change and the environment is seen as one of the most important issues in the UK, lower only than the cost of living, the NHS and the economy (Office for National Statistics, 2023a). This is reflected in research which shows that most people in the UK are concerned about climate change - 83% are extremely, very or fairly worried (Ipsos and Centre for Climate Change and Social Transformations, 2021), and a study showed that 62% of respondents thought that action to address it needs a "'high' or 'extremely high' level of urgency" (Capstick *et al.*, 2019, p.1). While awareness and worry does not necessarily lead to action, the recent global climate change activism may have a role in increasing awareness and engagement of the issue (Thackeray *et al.*, 2020).

Chapter 2: Literature review

As these declarations, and the notion of a 'climate emergency' more broadly, were a new phenomenon, initially there was little research in this area and none about the university declarations at the time this research project started. However, this changed over time, with research tending to focus on government declarations. An early paper by Ghag (2019) explored the actions that Liverpool Council, which declared a climate emergency in July 2019, needed to take to tackle climate change and reduce its carbon emissions, arguing that coordinated and radical action is needed immediately. Wider analysis of local authority declarations found that while there was a clear desire to act, commitments and plans varied and the role of the public in this was unclear (Gudde *et al.*, 2021). As time went on, further analysis of the declarations emerged. Interviews to uncover the underlying drivers of the local authority declarations across the UK found that citizens did in fact have a key role in both collaborating and pushing for change (Harvey-Scholes *et al.*, 2023). Yet following the many declarations in 2019, Howarth *et al.* (2023, p.3) note that "momentum [...] has diminished" with regards to climate action in local councils and communities. This suggests that the declarations were particularly prominent at a certain moment in time but their long term impact may be unclear.

There are also international insights into the climate emergency declarations. In Italy, around a third of declarations came from cities that had not previously been engaged in climate planning, and many declarations came about from local public pressure (Salvia *et al.*, 2023). This is reflected in a global study which found that pressure from civil society was one of the main reasons for the declarations, which were then intended to be used to increase public awareness as well as be a tool for future decision making (Ruiz-Campillo, Castán Broto and Westman, 2021). However, analysis of the declarations by local governments in Australia and Sweden found that both were mainly symbolic and in Australia they were likely to be aligned with existing policies, though they have helped to empower the climate movement in Sweden (Chou, 2021; Henman, Shabb and McCormick, 2023). These national and international insights demonstrate that while there may be some differences in the declarations, public pressure appears to be key. Though, similarly to the UK, whether the declarations have led to further action is unknown.

Chapter 2: Literature review

Declaring a climate emergency has not been limited to local and national governments; many organisations have also done so, including in the education sector. The University of Bristol (2019) became the first UK university to make such a declaration in April 2019 and many others followed suit (listed in Chapter 4). Additionally, the Climate Commission for UK Higher and Further Education Students and Leaders was also created in 2019 with the aim of generating a sector-wide response to the climate emergency (EAUC, n.d.b). These declarations from universities may be a form of advocacy, given they somewhat align with McKeever *et al.*'s (2023) definition of advocacy as low-cost amplification of an issue or they could be seen as part of universities' Corporate Social Responsibility as an organisation. The extent to which they reflect the content of other declarations, such as those by governments, is unknown. The declaration of a climate emergency may be different between universities and could be interpreted differently by those within the institutions such as their students, academic and non-academic staff.

This section has addressed ways in which universities are currently taking climate action and how they have recently been providing strong public statements about the climate emergency. Yet despite some action and good intentions on climate and sustainability more broadly, it is important to understand why there may be challenges in reducing emissions in the sector, for which culture is a key area to explore.

2.5 Culture and change

2.5.1 Definitions of culture and practices

Although most of the research into organisational culture focuses on corporate companies, much of this is applicable to universities and can offer important insights, not least because it is argued that universities are becoming more like businesses (Burnes, Wend and Todnem By, 2014). Cultures can be seen at many different levels, from countries and social groups to organisations; occupations can also have cultures of their own which are influenced by the wider culture that they sit within, such as that of an organisation (Schein and Schein, 2016). This highlights the importance of the approach I take in this Thesis in looking across different levels at both researchers and

Chapter 2: Literature review

the organisational level, as collectively this will lead to a better understanding of climate action within universities.

Below, I define culture and research culture as these are central themes in the research. While there are varying definitions of culture, the one I use in this research is that by Schein and Schein (2016, p.6), who define culture as “a pattern or system of beliefs, values, and behavioral norms that come to be taken for granted as basic assumptions”. These assumptions can be seen in organisational culture. Kotter and Heskett (1992) state that organisational culture has two levels and that they can influence one another. On one level, the authors view culture as something which can be seen visibly as patterns of behaviour which newcomers in the organisation are persuaded to embody; on the other level, culture is more embedded and not as visible, with shared values which usually endure over time and can be very challenging to change compared to elements of culture which are more explicit (ibid). Given the broad range of areas that universities are addressing in relation to sustainability and climate change, it is likely that aspects of both visible and less visible culture will need to be looked at in terms of how they might contribute to climate action or inaction. For example, visible culture could relate to adherence to university sustainability policies, whereas invisible culture could relate to norms around unsustainable practices such as excessive international travel.

The definition of research culture from Evans (2009) that I use closely relates to and builds on the general definition above by Schein and Schein (2016) to demonstrate how these aspects of culture occur in the specific context of research. Evans (2009, p.9) defines research culture as “shared values, assumptions, beliefs, rituals and other forms of behaviour whose central focus is the acceptance and recognition of research practice and output as valued, worthwhile and pre-eminent activity”. Research culture can be seen in several different values and behaviours in universities. For example (and as previously outlined in section 2.3) one of the core shared values in academia is autonomy (Bleiklie, Enders and Lepori, 2017; Boulton and Lucas, 2008; Clark, 1983; Collini, 2012). Further elements of research culture are explored below and in section 2.5.3.

Chapter 2: Literature review

Although there is a wealth of literature on organisational culture, there has been far less on culture in academia and almost none in relation to research, even though it is argued that multiple cultures exist within universities (Clark, 1983) as all the people involved in university life operate in different but connected areas (Deem and Brehoney, 2000). However, this lack of knowledge about research culture has changed in recent years with Wellcome and Shift Learning (2020) conducting the largest ever survey about the topic. Their survey showed that researchers value their work and have positive experiences of research culture when it is collaborative and supportive, though this is often not the case; the culture can also be competitive with the rituals, assumptions and shared beliefs of long hours, high workload and pressure to publish, leading to poor mental health and isolation (ibid). In the results, researchers themselves suggest ways to address these cultural issues such as changes to funding, additional support for those at early-career stages, and policies about best practice (ibid).

In addition to culture, practices are important to understand as they are closely linked and overlapping but do have their own definition. Following the structure used above for 'culture' and 'research culture', I will firstly define the broader term of 'practice' before outlining the definition that relates to research. In general, a practice can be defined as specific sequences of actions that are supported by institutions or wider society and culture (Gee, 2014). Yet a more specific definition is needed to understand how this occurs in research. I therefore use the definition by Holt (2013, p.99), who states that research practice is the "organized pursuit and production of knowledge", and that this knowledge produces a series of internal and external 'goods' which are gained by researchers. Internally, the practices researchers undertake improve their own understanding of a topic, giving them "methodological apprenticeship, a skilled engagement with phenomena under investigation and a theoretical advance", whereas externally they gain the benefits of "status...power...and rewards [which] are institutionally supported" (ibid, p.99). Holt (2013) also argues that status and rewards alone do not provide the full picture of what research practice is and therefore power is a particularly key element in this trio of external goods. Power is explored further in section 2.5.5.

2.5.2 How cultures can change

As well as understanding what culture is in relation to organisations and research, it is important to understand how it can change given the scale of the transformation needed to address the climate crisis. There are myriad theories from different disciplines about how to create change, yet this Thesis does not seek to identify an existing theory to understand how university and research culture can change, nor develop a new theory to apply in this context. Rather, in addressing the Research Questions, this Thesis seeks to situate them in the context of general understandings of culture and culture change which are explored in more detail below. I will draw on these in Chapter 8 in a joint discussion and conclusion of the research studies.

Cultures are not fixed but changing them can be a difficult process which takes a long time. Schein and Schein (2016) state that cultures are created through learning which is shared with newcomers to create a sense of group identity that can endure even when people within organisations change. Negative outcomes or occurrences can prompt these cultures to change, which the authors argue happens in three stages: motivation for change, learning new ways of working, then incorporating this into the culture going forwards (ibid). Changes to both behaviour and mindsets are needed for culture change to occur and be lasting, consisting of changing people's assumptions and understanding of issues as well as the way they act (ibid). This process takes time. It is suggested that changing a culture across a whole organisation can take three to ten years and that changes can reverse if success is declared too soon (Kotter, 2012). In the context of universities, Adams, Martin and Boom (2018) argue that the process of transforming into a sustainable organisation is not instantaneous. Even if universities try to implement changes quickly in response to their climate emergency declarations, the literature suggests that this is unlikely to be a quick fix.

It has been argued that sustainability has not been fully embedded or recognised in universities because there are cultural barriers to this happening and that addressing this would require culture change (Adams, Martin and Boom, 2018; Sterling, 2013). For

Chapter 2: Literature review

culture change to happen within universities, this may need to occur and be supported throughout the organisation. It is argued that leadership is essential for changing a culture and ensuring that it endures (Kotter, 2012; Kotter and Heskett, 1992), something that has also been found to be key in universities' success in addressing sustainability (McCowan, Leal Filho and Brandli, 2021). However, others have found that engagement at different levels of an organisation rather than solely at a leadership level is required for change (Pollack and Pollack, 2015).

For universities to become sustainable, Adams, Martin and Boom (2018) suggest that individuals within them need to behave in a sustainable way. This suggests that although strong leadership is needed, individuals outside of senior management and governance structures have the power to change culture and practices. Agnew (2012, p.477) further highlights the role of academics and argues that they have the ability to "support or undermine cultural shifts". This idea has been discussed by Professor Carly McLachlan (ALLEA, 2022) who argued that academics should not talk about the academic system as though it is separate to them, but accept that they are part of creating the system itself. This indicates a need to understand barriers and enablers to cultural change within universities, particularly in a sector where professional autonomy is often emphasised.

Universities have the potential to address climate change in a variety of ways; for example, university advocacy may lead to changes in government policy which in turn has a societal impact (McCowan, 2020). However, universities still have a significant carbon footprint and this and other factors may also impede change (Stein, 2023); in particular, there is a need to understand the ways in which universities might lock in or promote high carbon culture and practices. This cuts across universities as organisations as well as the people within them. The next section explores different areas of culture change before looking at how change can be influenced within universities.

2.5.3 Areas of culture change

Chapter 2: Literature review

One challenging area that cuts across the individual, community and organisational scales is the internationalisation of universities. This provides collaboration opportunities for research but at the same time substantially increases institutions' carbon emissions from travel (McCowan, 2022), leading to air travel becoming "increasingly entrenched" and part of career expectations (Higham and Font, 2020, p.4; Tseng, Lee and Higham, 2023). With regards to sustainable conference travel, it is argued that academics have some degree of power and freedom to create and advocate for change, without having to wait for change at a systemic level (Caset, Boussauw and Storme, 2018). At an organisational level, however, UK universities have become increasingly reliant for their income on international students whose emissions from travel are rising, as the value of UK student income has fallen (Aguilar García *et al.*, 2023; Shields, 2019). Discussing academics' own carbon footprints in relation to internationalisation, Sion Pickering from the Roundtable of Sustainable Academic Travel suggests that there should be collective action by universities to create change within the sector in a way that is equitable between institutions (Mayo, 2019). This suggests that internationalisation is an important area for universities to address to identify ways of allowing international working and collaboration in a low-carbon way.

Researchers are often under implicit or explicit obligations to travel to conferences and boost their international profile. Although some research found no relationship between flight emissions and academic performance (Wynes *et al.*, 2019), others argue that to be a successful academic you must fly because of university internationalisation and career progression (Hopkins *et al.*, 2016). Furthermore, international conferences within the UK and Global North countries more broadly have considerable barriers to academics from the Global South and are not accessible (Uluğ, 2022). This pressure to travel requires a change in culture (Hamant, Saunders and Viasnoff, 2019), which suggests that the expectations and norms within academia play a role in perpetuating unsustainable practices.

However, this common outlook in universities has meant that it is not only those from within sustainability and climate change fields trying to square their emissions with the action that needs to be taken to address climate change. There have been numerous

Chapter 2: Literature review

calls for researchers from multiple disciplines to reflect and act on their own carbon emissions, from agricultural economists (Desiere, 2016) and ethnomusicologists (Grant, 2018) to sustainable transport academics (Caset, Boussauw and Storme, 2018). Although these have mainly focused on conference travel, research travel more broadly has been explored as well as other areas which form part of undertaking research, such as office work (Achten, Almeida and Muys, 2013). Far from it being inappropriate for other disciplines to address these issues, research from all disciplines has a part in creating sustainable universities (White, 2013). This can extend to not only the content of research but how it is practised across different disciplines. Researchers working in sustainability and climate change-related fields have the same need to change the way they work, but it could be argued that they are under a greater obligation to do so due to their subject matter.

The way in which universities and those within them can take climate action is not straightforward given there are embedded high-carbon practices that may be seen as an essential part of their culture. One key example is the international outlook and activity of universities in the UK. There are clear benefits to this, including considerable overseas research funding, research collaborations with other countries (Universities UK International, 2023a) and international students having a big social and economic contribution (Higher Education Policy Institute *et al.*, 2023). Yet there is a contradiction in universities' aim to be sustainable on the one hand and international on the other (Glover, Strengers and Lewis, 2017). The climate impact of international travel can be seen in examples of UK universities' carbon emissions reporting, with international staff and student travel accounting for 29% of emissions at Lancaster University (n.d.), and business travel (mainly international) making up 22% of the University of Glasgow's (2021) emissions. Universities do recognise this contradiction and are ensuring there are links between their international and sustainability strategies (Desai and Morley, 2022), nevertheless, internationalisation is still viewed as a continuing priority. Universities have few plans to reduce flying (Hoolohan *et al.*, 2021) and are aiming to increase their number of international students and research collaborations, as well as provide more international experiences for students (Universities UK International, 2023b). Given these priorities are set at a high level, it is likely to be challenging (though

Chapter 2: Literature review

not impossible) for people within universities, such as researchers, to push against this to create culture change.

2.5.4 Influencing change within universities

Universities are large, complex organisations made up of professional services, numerous academic departments and central departments. Their structures are messy and it is challenging to find information about how they are structured internally (Hogan, 2012). There can be a huge amount of people working and studying within them, including students, senior management, academics and researchers, technicians and others supporting the successful running of the organisation. This complexity can make it difficult to identify what elements of culture may need to change, as there is overlap between organisational culture and the sub-cultures that are situated within it (Schein and Schein, 2016). As universities are broadly already engaged with sustainability and climate change, some people within universities will already be directly working on these issues but even those that are not may be able to influence change.

Universities as organisations and those working within them can engage with the climate crisis and affect change in different ways. There are already some existing recommendations for universities at an organisational level, such as a focus on overcoming barriers to changing high-carbon cultures in a positive way (Cannon, 2023). Engagement with climate change in universities can take many forms. This is exemplified by the Climate Action Venn Diagram which helps people to identify the overlap between “What are you good at? What is the work that needs doing? What brings you joy?” and is purposefully applicable to anyone (Johnson, 2022). This could generate myriad actions for those working in different disciplines and at different career stages.

Staff and students have the potential to affect change through advocacy and activism. Both approaches have been used by academics who have publicly urged governments and universities to act (Ripple *et al.*, 2019; Times Higher Education, 2019), with some advocating for peaceful civil disobedience by scientists and acting on it (Artico *et al.*,

Chapter 2: Literature review

2023; Capstick *et al.*, 2022; Gardner *et al.*, 2021). Some argue that more academics and students need to engage in activism to create transformations in universities (McGeown and Barry, 2023; Gardner *et al.*, 2021) though as I explore below in section 2.5.6, some literature suggests they face barriers in engaging in climate action at all.

In recent years, many academics have been willing to advocate for action on climate change and put public pressure on universities to take a stand on climate change. A group of academics from around the world, including the prominent climate scientist Professor Michael Mann, penned an article encouraging universities to declare a climate emergency and suggested actions to accompany this (Renouf *et al.*, 2019). Just one month after the aforementioned article, thousands of academics and campaigners published an open letter to Vice-Chancellors, professional body Universities UK and research funder UK Research and Innovation arguing that universities' key role relating to knowledge is needed to address the climate crisis and urging them to "transform our universities into action-oriented institutions" (Times Higher Education, 2019). A few days later, over 11,000 scientists from around the world declared that there is a global climate emergency and outlined actions that everyone could take to mitigate climate change, though particularly referring to governments and businesses (Ripple *et al.*, 2019). More recently, academics have also pushed for universities to move to 100% plant-based catering (Carrington, 2023). Strong public advocacy is possible as universities are unique institutions where academics have a relatively high degree of freedom in public engagement activities as individuals. This quick succession of advocacy suggests that in the context of the emergency declarations where there is heightened awareness and publicity of climate change, there are many academics and scientists willing to publicly state that action is needed.

For decades, researchers and scientists have been crucial in emphasising the need for rapid emissions reduction, though they themselves are also part of the problem. Researchers at universities do not operate in isolation and their activities are part of a wider structure and culture which is important to understand. Ávila *et al.* (2017, p.1268) argue that those in leadership positions and with power and influence within universities are often not inclined to think about what a sustainable university might look like.

Chapter 2: Literature review

Evidence shows that people in similar positions in government and businesses may also be more focused on immediate issues, reputation and financial issues (Rickards, Wiseman and Kashima, 2014). However, the prominence of climate change has increased in recent years and universities themselves recognise their role in climate action (Universities UK, n.d.a). Additionally, some researchers, or former researchers, may also be leaders and decision-makers within their universities so it may not be such a clear divide between research and leadership.

2.5.5 Power and culture

In order to further understand culture and culture change, it is important to consider the role of power, one aspect of which is governance. Governance refers to strategic decisions made by organisations and the authority or power to make those decisions and in what way (Kim, 2008). It is also a key part of how universities address climate change, with organisational culture forming a key element of sustainability governance as available resources, previous experiences and how the university communicates will have influenced how it engages with sustainable development (Bauer *et al.*, 2020).

Power is also a feature of how cultures operate, for example, how people have control over information and processes or the way that leaders are able to use their personal power to direct how people behave (Kotter and Heskett, 1992; Schein and Schein, 2016). It can also be considered as part of organisational practices and institutional routines and norms (Mumby and Stohl, 1991). Power is difficult to define as it is a particularly contested and complex concept with multiple points to consider such as having 'power over' or 'power to' do something (Avelino, 2021). Avelino (2017) offers definitions for three types of power related to sustainability transitions, which makes them especially relevant for this research: reinforcing, innovative and transformative power. Reinforcing power is defined as the extent to which actors (which includes individuals as well as organisations) can reinforce and recreate current structures; innovative power is the extent to which actors can create new and visible products and resources; and transformative power is the extent to which actors can create new structures and organisations (*ibid*). Given the role power plays in culture change within

Chapter 2: Literature review

organisations, if universities are to transform to address the climate crisis it is important to consider how power operates within the university context.

In universities, the location and operation of power is a significant factor in forming and sustaining cultures (Hoover and Harder, 2015) and so affecting the ways in which climate action does or does not progress. The ways in which power is distributed and operates is also a key reason why carbon emissions, in general, have not decreased despite 30 years of research and efforts to do so (Stoddard *et al.*, 2021). In the definition of research practice that I use in this Thesis, power is seen as one of the 'external goods' that is gained through practising research, which can include holding positions in decision making groups or organisations with responsibilities for issues such as funding or policy (Holt, 2013). In contrast, some individuals may have less agency than others if they occupy more junior or precarious positions. Agency is also a key consideration for climate justice at individual, collective and institutional levels within universities, including focusing on norms and practices (Nussey *et al.*, 2022). When considering the systemic changes needed to address complex problems such as the climate crisis, it is important to understand the role of power otherwise problems related to this may be reproduced (Stein, 2023). In a university context, this could for example include changes to international travel in a way that disadvantages early career researchers who have not had the same career or networking opportunities afforded to them as more senior colleagues.

2.5.6 Researchers' perceptions and engagement

It is important to understand researchers' perceptions of the climate crisis in the context of how they shape and reproduce research practices and culture as well as the organisational culture in which they are situated. As research practice has had less focus than other areas of climate action in universities, this may be part of organisational culture that could prove harder to change if it is less visible. While there is much to be done at the organisational level, given researchers' important role in potentially transforming the sector (McGeown and Barry, 2023; Stein, 2023; Thierry *et al.*, 2023) and the ways in which they collectively comprise the organisation itself, a

Chapter 2: Literature review

greater understanding of their perceptions, engagement and how they relate to research and university culture and practices is needed.

There has been little focus on how research culture and practices relate to climate action in universities. In the literature, knowledge of researchers' perceptions and their role in climate action is piecemeal, with a mix of participant types and often explored as individual university case studies or in universities' own staff surveys. Therefore, it is important to examine researchers' perceptions and what is known about this at present. Looking firstly at staff perceptions of university climate action, some internal sustainability surveys from UK universities indicate positive perceptions but also a significant amount of uncertainty (Leal Filho *et al.*, 2023; Manchester Metropolitan University, 2020; University of Bath, 2023a; University of Bath, 2023b). There are also some insights at a global level. A survey in 51 countries with university staff (mainly teaching and administrative) involved with sustainability found that a majority think their university views climate change as important, yet less than a third feel the plans for tackling it are 'well developed' or well implemented in teaching and research (Leal Filho *et al.*, 2019).

Secondly, regarding researchers' own engagement, some staff in the UK already address sustainability in their teaching and research, feel motivated to be sustainable at work (Manchester Metropolitan University, 2020) and understand how to address sustainability (Allen and Rapkins, 2022). There is some support for climate action or greater sustainability in their job roles (Leal Filho *et al.*, 2019; University of Bath, 2023) but also a lack of professional development to do so (Manchester Metropolitan University, 2020). Thierry *et al.* (2023) suggest that researchers and their institutions simultaneously understand that the climate crisis is happening but do not act on it. There is some data to support this argument, with surveys of researchers across France and academics at a Colombian university finding almost universal levels of concern about the climate crisis, yet in France this is not translating into corresponding action (Blanchard *et al.*, 2022; Espinosa *et al.*, 2023). Barriers to conducting sustainability research include a lack of power, funding, motivation and a common goal (Alam, 2008; Leal Filho *et al.*, 2018; Overland *et al.*, 2022), while lack of knowledge is a key barrier to

Chapter 2: Literature review

reducing personal carbon emissions and taking climate action (Bekaroo *et al.*, 2019; Manchester Metropolitan University, 2020). Some of these same barriers (funding and a lack of expertise or knowledge) are seen at an organisational level, as well as resistance to change and high workload (Blanco-Portela *et al.*, 2017; Jamdar *et al.*, n.d.). Urai and Kelly (2023, p.4) offer a call to action to academics and suggest new principles, based on Kate Raworth's Doughnut Economics (2018), to change how academia is practiced to remove barriers to climate action, such as changing from being part of the rat race to 'slow scholarship' and being part of society and the environment rather than in an "isolated ivory tower".

Finally, there is some indication of differences between researchers across knowledge, responsibility and advocacy. It is argued that researchers from all disciplines have an important role in conversations about climate action in universities as "there is no research on a dead planet" (Thierry *et al.*, 2023, p. 5). Yet evidence from the United States shows differences between subject areas in knowledge, concern, perceived responsibility and comfort in teaching climate change (Beck, Sinatra and Lombardi, 2013). Broader research with climate change communication practitioners in Australia found mixed views with regards to being seen as advocates as well as facing barriers including funding and measuring impact (Badullovich, 2022). There are further insights around advocacy, with an international survey of researchers across disciplines and career stages finding that compared to non-climate researchers, climate researchers said they engaged in climate change advocacy and activism to a greater extent (Dablander, Sachisthal and Haslbeck, 2024).

However, other research in this area has tended to focus on travel; understandably, given the internationalisation of universities and that researchers may be under implicit or explicit obligations to travel and boost their profile, with calls for researchers from multiple disciplines to act on their own carbon emissions (Caset, Boussauw and Storme, 2018; Desiere, 2016; Grant, 2018; Le Quéré *et al.*, 2015). In fact, a global survey of climate researchers found that they fly more compared to non-climate researchers, while also being more concerned about the environmental impact of travel and wanting to reduce how much they fly for work (Whitmarsh *et al.*, 2020). However, other research

Chapter 2: Literature review

found that university staff in general were less willing to change their behaviour around flying the harder the action was (i.e., abstaining from travel was less favoured than using a different mode of transport; Thaller, Schreuer and Posch, 2021). As travel is often perceived to comprise a core part of academic culture and practices, it is argued that changes need to be made at different scales, such as participatory creation of travel policies (Hamant, Saunders and Viasnoff, 2019; The Royal Anniversary Trust, 2023). Yet Hoolohan *et al.* (2021) also argue that cultures and practices which embed flying need to be changed.

Despite these various insights from prior research, a thorough understanding of researchers' perceptions of the climate crisis within the UK university sector is lacking.

2.6 Next steps

From 2019 onwards, some universities in the UK declared climate emergencies but it is not clear what this means in practice. Therefore, as well as understanding how universities are portraying themselves and their role in addressing climate change in their declarations, there is a need to understand what actions they will be taking as part of this and whether they intend to challenge societal and academic norms in areas with high carbon emissions. As suggested by Dillon (2019), universities' climate emergency declarations provide an opportunity to research a phenomenon as it is happening, which the present research will contribute to. Examining these universities also provides an opportunity to understand university and research culture which may not be explicit. Looking at these universities will enable exploration of how researchers and universities at an institutional level could establish a low-carbon research culture. In looking at researchers within universities, the literature has shown that they are part of a wider system and culture. Therefore, although my focus will be on researchers and how they operate within (and whether they challenge) organisational cultures and practices, this will also include looking at interconnected parts of universities and people within them which are relevant to researchers.

Chapter 2: Literature review

This chapter has outlined the social transformations required to address the climate crisis, universities' roles and climate action to date, concluding with an overview of culture and change. Chapter 3 will now build on this to detail the chosen theory, framework and methodology behind the body of research for the Thesis.

Chapter 3

Theory, framework and methods

Contents

3.1 Chapter overview	51
3.2 Overall theoretical approach	51
3.2.1 Epistemology, ontology and theoretical approach	51
3.3 Practical framework	53
3.3.1 Governance dimensions	56
3.3.2 Cultural orientations	57
3.4 Methodological framework	59
3.4.1 Mixed methods approach.....	59
3.4.2 Reflexivity	62
3.5 Methodology: Documentary analysis (study 1)	63
3.5.1 Data collection.....	64
3.5.2 Approach to analysis.....	66
3.6 Methodology: Participant observation (study 2)	69
3.6.1 Research questions and research design.....	69
3.6.2 Selection of university for case study	70
3.6.3 Data collection.....	72
3.6.4 Approach to analysis.....	73
3.7 Methodology: Interviews (study 3)	74
3.7.1 Research design	75
3.7.2 Interview participants	76
3.7.3 Interview protocol design	81
3.7.4 Approach to interview analysis	82
3.8 Methodology: Survey (study 4)	84
3.8.1 Research questions and research design.....	84
3.8.2 Survey administration and participants	86
3.8.3 Survey development	88
3.8.4 Survey prize draw.....	99
3.8.5 Survey data preparation.....	99
3.8.6 Approach to qualitative data analysis	101
3.8.7 Approach to quantitative data analysis.....	101
3.9 Next steps	104

3.1 Chapter overview

The first chapter provided overall context to the research, along with defining key concepts and the Research Questions and Objectives. This was followed by a chapter providing an overview of the existing literature on universities and sustainability. In this chapter, I detail the overall theoretical approach I use for the research (section 3.2) before outlining a practical framework that is used to bring the separate pieces of research together in a way that is more action-oriented to align with my desire to focus on practical solutions from the work (section 3.3). This practical framework will be used to organise the final discussion and conclusion in Chapter 8. In the final section of this chapter, I discuss the overall methodological framework for the research, including the mixed methods approach (section 3.4). Subsequent chapters detail the specific methods for each piece of research and therefore they are not included here.

3.2 Overall theoretical approach

This research is interdisciplinary, and the literature review (Chapter 2) has been drawn from a range of disciplines, from social sciences and psychology to business studies and geography. This breadth of literature also means that there are many potential theories to situate the research in, for example, strategic management and corporate governance theories have previously been used in climate change research (Daddi *et al.* 2018), and critical theory and postcolonial approaches are also relevant for organisational and business research (Duberley, Johnson and Cassell, 2013). Having a theoretical framework is important because it provides a framework for understanding and interpreting the research findings (Bryman, 2016). The main theoretical concept for the research is culture, which was defined and explained in the previous chapter, though the following section sets it out in a systematic way as it will be used in the empirical research.

3.2.1 Epistemology, ontology and theoretical approach

Epistemology refers to what constitutes knowledge and ontology refers to questions around reality (Duberley, Johnson and Cassell, 2013). It is important to state the

Chapter 3: Theory, framework and methods

epistemological and ontological positions used in this work, both of which researchers need because they form the underlying assumptions of the research approach (ibid). The ontological position adopted for this research is constructionism, which states that reality is a social construction (Bryman, 2016), reflecting how social researchers often situate their work in a broader social context (Grant, 2019). This is also reflected in the epistemological position I adopt, which considers that knowledge of reality comes from people's own interpretations of it (Levers, 2013) and therefore sees truth or meaning as socially constructed. In the case of this research, using this approach specifically means that it will allow for an understanding of how universities and researchers are situated within a wider social context and the current context of climate action, as well as how they interpret and engage with climate change.

The theoretical approach that this research is informed by is critical theory, which adheres to the ontological and epistemological positions outlined above. Critical theory originates from former Frankfurt School members in Germany in the mid-1900s (Prasad and Caproni, 1997) and can be defined as the "connection between politics, values and knowledge" (Duberley, Johnson and Cassell, 2013, p.22). Within organisations, critical theory is used to understand how management practices are legitimised within the context of power relations (ibid). There are four essential pillars in critical theory: the social construction of reality; an emphasis on power and ideology; internal and external connections and contexts (what the authors call 'totality'); and providing reflection and suggestions for change or 'praxis', each of which will be explained in turn (Prasad and Caproni, 1997). Firstly, the social construction of reality pillar refers to how reality is created and given meaning, namely that there is no objective reality (ibid). Prasad and Caproni (1997) state that this underlying worldview is influenced by power and ideology, defined as understanding what shapes society and organisations, how power can be resisted, and what elements encompass different ideologies. Internal and external connections and contexts are a key part of critical theory as it focuses on how phenomena relate to culture and practices both within organisations but also in a wider social context (ibid). Finally, the focus on reflection and change moves from simply having awareness of an issue to focusing on it being a call to action (ibid).

Chapter 3: Theory, framework and methods

All of the aforementioned elements of critical theory demonstrate that it is well aligned to this research as it reflects the ontological and epistemological positions adopted and aligns with the literature explored in Chapter 2. Although critical theory is usually applied in research which focuses on power relations and negative impacts on people (Duberley, Johnson and Cassell, 2013), this research is framed in the context of action to mitigate climate change, a positive action to tackle something negative. Therefore, this could be seen as a drawback as it is a reversal of what critical theory tends to be used for. However, critical theory is still appropriate to inform this research because the themes outlined above (social construction of reality, power, connections and contexts, reflection and suggestions for change) are all highly relevant elements of universities and my research focus, and have links to the key concepts of culture and practices. Therefore, critical theory is a useful theory to inform my approach. These elements are both relevant regarding universities as institutions as well as the individuals and communities within them. While other theories could have been chosen, critical theory is the most closely linked with the subject I am addressing whilst still allowing a broad remit of research.

The analysis throughout this research is thematic, with critical theory and discourse analysis informing the research to attend to power and social context. While critical theory is not an explicit focus throughout, relevant methods have been used at specific points in the research. To analyse universities' climate emergency declarations, Critical Discourse Analysis (CDA) was used (see Chapter 4) which belongs to part of a broader range of approaches that aim to take a critical approach – including critical theory. To analyse the interviews, thematic analysis was used, with some inspiration taken from discourse analysis (see Chapter 5). For the other sections of research (participant observation and survey), content analysis was used where a more explicit reference to critical theory was felt to be less appropriate. However, in the discussion and conclusion (see Chapter 8), all elements of the research are brought together with reference to elements relevant to critical theory using the practical framework explained below.

3.3 Practical framework

Chapter 3: Theory, framework and methods

To organise the final discussion and conclusion (Chapter 8) and consolidate the findings across the different research studies, I draw on a more specific, practical framework that sits underneath the overall theoretical framework of critical theory. In the context of this Thesis, the use of a 'practical' framework means relating the research findings to a framework which is understandable and actionable for people working in the HE sector. This is to ensure that the key conclusions from the work are action-oriented and accessible to decision makers, in line with recommendations from existing literature (Nielsen *et al.*, 2024; Watts, 2017). The practical framework I use is from the HOCH^N ('Sustainability at Higher Education Institutions: develop — network — report') research project, a network of HEIs in Germany which aims to "embed, implement and establish sustainable development" in the sector (Bauer *et al.*, 2020, p.492; Niedlich *et al.*, 2019). The authors created nine dimensions (see Table 1) related to culture and governance in HEIs to understand how different institutions are approaching sustainability. This partly consists of five governance dimensions—'governance equalizers'—referring to how sustainability governance functions in HEIs, which were created from existing literature and validated with expert interviews (Bauer *et al.*, 2018). There are also four cultural dimensions—'cultural orientations'—referring to aspects of organisational culture that are relevant for sustainability governance in universities, which were created from expert interviews across multiple HEIs (Niedlich *et al.*, 2019).

Table 1. Original and adapted dimensions from the HOCH^N project.

Group	Original dimensions from the HOCH ^N project	Adapted dimensions for this Thesis
Governance dimensions	Politics	Status, power and rewards
	Profession	Structure and collaboration
	Organisation	[Same as above]
	Knowledge	[No change]
	Visibility	[No change]
Cultural dimensions	Attribution of responsibility for sustainable development	Responsibility and advocacy

Chapter 3: Theory, framework and methods

	Purpose of the higher education institution	Purpose of universities
	Conception of sustainability	Conception of climate change and action
	Relevance and scope of organisational change	Relevance and scope of change

The framework from the HOCH^N project is relevant for this research as it focuses on sustainability in universities in a Western European context and includes dimensions about culture. From a theoretical point of view, it also has considerable crossover with aspects of critical theory as well as with my approach looking at multiple scales, given their project explores different levels within HEIs (Bauer *et al.*, 2020). In Bauer *et al.*'s (2018) framework, they argue that governance is particularly relevant as it is a core part of universities' responsibility across research, teaching and campus operations. However, to make this framework more relevant to examining research culture and practices for my Thesis, I have adapted the framework from showing "cultural and functional aspects of SD [sustainable development] governance in HEIs" (Bauer *et al.*, 2020, p.3) to also include elements related to research in UK universities, drawing on definitions of research practice and research culture from Holt (2013) and Evans (2009) respectively. An overview of the original and adapted dimensions are shown in Table 1 above. Indeed, Bauer *et al.* (2020) suggest that the frameworks can be applied in different ways in future research. These adjustments ensure that the framework is particularly relevant to research in universities and can help answer the detailed Research Questions across the individual, community and organisational scales (RQ1: How do universities' climate emergency declarations reflect their responses to climate change and what do they mean in practice? RQ2: How does university and research culture shape the way that academic researchers engage with climate change?).

I now address each of the dimensions in turn, expanding on them in more detail, explaining the changes I have made and how they relate to my Research Questions or theoretical approach. Where the authors (Bauer *et al.*, 2020; Niedlich *et al.*, 2019) refer

to sustainability or HEIs, I will be focusing more specifically on climate change and universities.

3.3.1 Governance dimensions

Status, power and rewards

I define this dimension using Bauer *et al.*'s (2020) original definition regarding how sustainability is put into practice and given legitimacy internally and externally by those within universities, but I have changed the title to 'status, power and rewards'. These are the three elements defined by Holt (2013) as the external 'goods' gained by researchers through their research practice. This creates a clearer and more relevant framing and now explicitly links to the research focus in Research Question 2 while still adhering to the original definition and including universities as institutions, as 'power' can encompass decision-making aspects. Bauer *et al.* (2020, p.497) originally titled this first dimension 'politics', to explore the question "how is sustainability implemented and legitimised within and outside the university?" through different forms and levels of decision-making such as by individuals and groups, or using top-down or bottom-up processes. While politics is also part of critical theory (Duberley, Johnson and Cassell, 2013) and therefore aligns with this dimension, Bauer *et al.*'s (2020) definition offers a broader understanding than the original title of 'politics' suggests – which could be taken to mean politics in relation to governments, which is partly why I decided to change the title.

Structure and collaboration

Across individual, community and organisational levels, the structures that universities create and in which researchers operate and collaborate are important in understanding universities' climate action and research culture and practices. I define this dimension using Bauer *et al.*'s (2020) definition of how sustainability is understood and implemented by different areas within HEIs, how a collaborative understanding of sustainability can be developed, and how collaborative work takes place. The authors originally had two separate governance dimensions of 'profession' and 'organisation', asking the questions "how are professional perspectives and competencies linked?"

Chapter 3: Theory, framework and methods

and “how are cooperative work and task processing possible?” (Bauer *et al.*, 2020, p. 497). The areas within this dimension are both relevant to my research, therefore I have kept the original definitions, but I have merged the two under a new title of ‘structure and collaboration’.

Knowledge

Given that knowledge is a key part of the purpose of universities (Boulton and Lucas, 2008) as well as part of the definition of research practice (Holt, 2013), this dimension is highly relevant. I define this dimension using Bauer *et al.*'s (2020, p.497) definition of knowledge which relates to sustainability problems within HEIs and how they can be effectively addressed across the organisation, asking “how is the required knowledge developed and used competently?”. Both the title and the definition are clear and link to my research, therefore no changes have been made.

Visibility

Bauer *et al.* (2020, p.498) define visibility as how HEIs make their sustainability actions visible and create awareness of these issues, asking “how is awareness of the need for sustainability created?”. This is highly relevant for both Research Question 1 and Research Question 2 and across the individual, community and organisational levels as they cover public-facing climate emergency declarations as well as staff engagement with climate change. Given that both the title and definition are clear and link to my research, no changes have been made.

3.3.2 Cultural orientations

Bauer *et al.* (2020) grouped their four cultural dimensions into two overarching groups which represent how elements of sustainability can be integrated and to what extent sustainability is viewed as part of an HEI's development. For this Thesis, I have kept each cultural dimension separate to avoid creating unnecessary complexities. I have also broadened the definitions to include more research-specific elements, as explained below.

Responsibility and advocacy

I define this dimension in line with Niedlich *et al.*'s (2019) definition, which relates to how universities have different roles to address sustainability within their institutions. This is relevant for both of my research questions, though I have simplified the title and added 'advocacy', so that it now reads 'responsibility and advocacy'. I made this change as the literature has shown that there has been recent advocacy (and activism) by academics in relation to university action on climate change (Capstick *et al.*, 2022; Renouf *et al.*, 2019; Times Higher Education, 2019) which links to who is seen as being responsible for taking action. Also, both responsibility and advocacy may be relevant across the individual, community and organisational scales that I consider in the research. The original title for this dimension was "attribution of responsibility for sustainable development" (Niedlich *et al.*, 2019, p.8).

Purpose of universities

I use Niedlich *et al.*'s (2019) definition for this dimension which relates to information about the key purposes of HEIs—seen as research and teaching—and their wider interaction with society. This is highly relevant for both of my research questions as it reflects the different purposes of universities discussed in the literature (for example, Boulton and Lucas, 2008) and underpins why and how universities can take climate action. However, I have made a minor adjustment to the title to make it specific to universities. The original title for this dimension was "purpose of the higher education institution" (Niedlich *et al.*, 2019, p.9).

Conception of climate change and action

For this dimension, I have kept the definition from Niedlich *et al.* (2019) who define it as what sustainability means within and between different HEIs. In their research, the authors found considerable variation in whether sustainable development was clearly defined and the extent to which it was embedded across multiple areas (*ibid*). This dimension is relevant to my research as the way that sustainability is defined may influence research culture within the university. Therefore, I have broadly kept the definition but made an adjustment to the title from "conception of sustainable

Chapter 3: Theory, framework and methods

development” to “conception of climate change and action” to make this more relevant to my work (Niedlich *et al.*, 2019, p.9).

Relevance and scope of change

This dimension is relevant as my research looks at the organisational level but also more broadly at culture and practices, for which the relevance and scope of change will likely be relevant. I define this dimension as the extent to which change is intended and how relevant it will be across the whole institution, keeping the original definition by Niedlich *et al.* (2019) who find in their research that this varied and that an institution-wide approach was challenging. To acknowledge that there may be different levels of change within universities, not just at an organisational level, I have made a minor adjustment to the title from ‘organisational change’ to ‘change’. The original title for this dimension was “relevance and scope of organisational change” (Niedlich *et al.*, 2019, p.9).

3.4 Methodological framework

3.4.1 Mixed methods approach

In reviewing the existing literature about universities and climate change and developing my research questions, I decided to take a mixed methods approach - using both qualitative and quantitative research methods. There are four sequential phases of research, all of which address the overarching Research Question (how are UK universities currently responding to the climate emergency and how are their researchers implicated in climate action?). Firstly, documentary analysis and secondly, participant observation, address Research Question 1 (how do universities’ climate emergency declarations reflect their responses to climate change and what do they mean in practice?). Thirdly, there are interviews and finally, a survey, both of which address Research Question 2 (how does university and research culture shape the way that academic researchers engage with climate change?). Ethics approval for the research was granted by the School of Psychology Research Ethics Committee at Cardiff University.

Chapter 3: Theory, framework and methods

Research Question 1 mainly focuses on the organisational level, looking at university outputs (public-facing university climate emergency declarations) and actions at a senior and institution-wide level (single case study of internal university meetings).

Research Question 2 focuses primarily on researchers as a key group; as part of this, I take the view that researchers together comprise a wider community, with the potential to take collective action and to contribute to larger-scale change. This covers interviews with researchers and wider university staff and sector specialists, and a UK-wide survey of researchers. An overview of these is shown below in Table 2.

Table 2. Overview of research methods and Research Questions.

Overarching Research Question: how are UK universities currently responding to the climate emergency and how are their researchers implicated in climate action?			
Research Question 1		Research Question 2	
Qualitative			Quantitative
Stage 1	Stage 2	Stage 3	Stage 4
Documentary analysis (N = 26 documents)	Participant observation (N = 11 meetings)	Interviews (N = 22 interviews)	Survey (N = 1,853 participants)

Combining methods

Using mixed methods was appropriate for several reasons. Mixed methods can allow for a more comprehensive understanding of the area of study as qualitative methods can uncover findings that may not have been possible using quantitative methods and vice versa (Lieber and Weisner, 2015), for example, deeper meanings rather than bounded responses. One aspect to consider is whether there may be challenges to using mixed methods if the epistemological and ontological positions are different, or if there are different underlying theories (Bryman, 2016). While I have drawn more heavily on critical theory in some methods than others, they do not have contradictory approaches and the practical framework outlined above (section 3.3) will bring all the research studies together under a common framework. While there are also considerations about

Chapter 3: Theory, framework and methods

whether the qualitative or quantitative methods are the priority and which comes first (Bryman, 2016), this research was guided more strongly by the timeline of events that I was studying as the climate emergency declarations were a 'live' issue and therefore I addressed those first, before moving on to other areas of research.

When combining methods in social science research, they should “enhance each other, balancing strengths and weaknesses” (DeCuir–Gunby, 2011, p.2). There are several ways to conduct mixed methods research. This PhD research does not use triangulation, instead conducting the research through complementary and development methods. The first approach is known as complementarity studies, where both qualitative and quantitative methods are used to “examine intersecting but different aspects of a phenomenon” (ibid, p.4). This is used for Research Question 1, where different methods are appropriate for understanding public-facing documents and internal meetings. The second approach (development studies) uses qualitative and quantitative methods one after the other, with the first informing the next (ibid). This was used for Research Question 2, where the interviews were used as the basis to then develop the survey questions. This enabled the survey to reflect new insights gained from the interviews which were not apparent in the literature. Additionally, insights from the documentary analysis and interviews were used to develop hypotheses and exploratory questions for conducting statistical tests on the survey data to identify professional differences between researchers (see Chapter 6, section 6.3.4). All four stages of the research were informed by the literature review (Chapter 2).

While each stage uses different methods and addresses a different part of the research questions, the findings overlap and collectively answer the overarching research question. The findings from the two studies from Research Question 1 are discussed together (Chapter 4), as are the two studies from Research Question 2 (Chapter 7). A final discussion and conclusion (Chapter 8) integrates the findings from all four studies.

The literature also suggests that different methods may be appropriate to understand different aspects of organisational culture. Adams, Martin and Boom (2018) argue that the approach for researching organisational culture should be mixed methods and work

Chapter 3: Theory, framework and methods

at two levels: visible, best measured quantitatively, and hidden, best measured qualitatively. Additionally, Schein and Schein (2016) argue that behaviour alone cannot show culture. While I did not make as clear a distinction as Adams, Martin and Boom (2018) suggest, I recognised that there were likely to be different aspects of culture and practices which may be uncovered through using a variety of methods.

3.4.2 Reflexivity

Reflexivity—“an awareness of the researcher’s role in the practice of research and the way this is influenced by the object of the research”— is an important consideration as it ensures a level of self-awareness and acknowledgement of how the research can be impacted by one’s own views and biases (Haynes, 2013, p.72). From the start of the research, and as explained in the introduction (Chapter 1), I wanted this Thesis to have a practical impact that would be relevant and helpful to decision makers. This has influenced the theoretical choice I made regarding choosing a critical theory approach as this aligns with my aspiration to bring about change through the work.

Understanding my own positionality is particularly important for this Thesis because I am a climate change researcher working in a university, which means there is considerable overlap between my role and who I was researching as I have analysed data from university documents and staff within universities, including researchers and those with links to sustainability and climate change. This overlap of the barriers between myself and those I was interacting with in my research was to my advantage as it meant that there were already commonalities between us, allowing for a greater level of trust and understanding – not only in relation to the participants but also those I asked to distribute the survey to their staff, for example. Yet Tietze (2013, p.53) also cautions that this overlap can lead to ambiguity and assumptions. Therefore, I used my familiarity to build trust and understanding with my research participants, while also making sure that the aims of my research were clear.

Additionally, there are some topic areas within the research which I have pre-existing opinions about or engage with in a certain way, given my personal commitment to

Chapter 3: Theory, framework and methods

taking climate action. For example, with the issue of travel, I have chosen to stop flying and this could influence my judgement of other people's choices. While understanding that the research is subjective and it is not possible to take a completely objective approach, I nevertheless have sought to be aware of my own positionality when undertaking data collection and analysis. This has included reflecting on the ways in which my personal views may be influencing the questions I asked in the research or the themes I identified.

As part of my reflexive approach, I also considered the climate impact of my work given that research culture and practices are a key focus in Research Question 2.

Additionally, in the data from the UK-wide survey with university researchers (see Chapter 6), there were some suggestions by researchers to explicitly state the climate impact of their work - this also informed my idea to address this here. Most of my work for the Thesis was conducted at home, with a small amount on the Cardiff University campus. At home, I am on a renewable energy supplier. When I worked on the university campus, I walked there. I conducted the documentary analysis digitally and the meeting observations were done partly in person, partly online. Both the interviews and surveys were conducted online. I attended two conferences during my PhD to showcase my research, both of which were in person – one of these was in Cardiff which I walked to, the other in London for which I travelled by train. Therefore, overall, the climate impact of the Thesis is likely to be very small.

3.5 Methodology: Documentary analysis (study 1)

I used documentary analysis to address Research Objective 1 to assess the role of universities' climate emergency declarations in their progress towards sustainability and understand what has been said publicly by universities in this regard. The declarations were made as written announcements where universities actively decided how they wanted to be portrayed as the declarations were public-facing. Therefore, documentary analysis was appropriate given the format of the declarations and it allowed me to consider how they were created and used as well as their content.

3.5.1 Data collection

The population for the data collection was UK universities that have declared climate emergencies. The sample I chose was those that declared within 12 months of the first UK university to do so, which was in April 2019. I set a 12 month restriction because I wanted to gain an understanding of the declarations during the initial wave of declaring when it appeared to have momentum. Also, the initially rapid rate of declarations began to slow into early 2020: whereas 14 universities declared during the first three months from mid-April 2019, only six did so in the final three months to mid-April 2020. Therefore, this was a sensible timeframe as it covered most of the declarations and was also a realistic timeframe for the work.

Some universities made declarations as standalone announcements whereas others declared by signing the Global Universities and Colleges Climate Letter (hereafter referred to as the Climate Letter), a public online document organised by the Environmental Association for Universities and Colleges (EAUC), the climate action non-profit Second Nature, and the UN Environment Programme's Youth and Education Alliance (UN Environment, 2019). The Climate Letter aimed to bring the Further and Higher Education sector together to "collectively declare a Climate Emergency" to showcase wide support for action towards two of the UN Sustainable Development Goals (SDGs) to share with governments and media in the run up to COP26 (SDG Accord, n.d.).

I identified the climate emergency declarations using the following criteria:

1. Regular review of the Climate Letter to check for new additions
2. Regular review of the list of university sustainability commitments on the EAUC (n.d.) website where declarations had been listed
3. Checking news articles on the climateemergency.uk website
4. Searching for "climate emergency" on each university's website and/or searching for variants of "climate emergency" and the name on the university on

Chapter 3: Theory, framework and methods

Google. This was done for Universities UK members that were not found to have made a declaration using the three initial search criteria above.

The Universities UK member list (140 at the time the research was conducted) was used for step 4 as this is the most definitive list of UK universities, though it does not quite cover the total number of HE institutions (161; Amber *et al.*, 2020). This combination of search methods was required given the different ways in which universities declared and the lack of a central database. If a declaration was not found using the search methods above, it was not counted as having made a declaration.

This provided a total of 37 universities (see Table 3). Some universities declared a climate emergency on the same date and have therefore been listed as joint declarations, and where the date could not be found for those that declared via the Climate Letter, confirmation was requested via personal correspondence with the EAUC or directly with universities. See Appendix A1 for a table with links to each declaration. See Chapter 6 (section 6.3.4) for additional universities that declared after this first year.

Table 3. UK universities that declared climate emergencies between 17th April 2019 and 17th April 2020.

Declaration	Date of Declaration	University
1st	17th April 2019	University of Bristol
2nd	18th April 2019	Newcastle University
3rd	2nd May 2019	Glasgow University
4th	3rd May 2019	Keele University
5th	16th May 2019	University of Lincoln
6th	20th May 2019	University of Exeter
7th	5th June 2019	University of East Anglia
8th	13th June 2019	University of the West of England (UWE) Bristol
9th	20th June 2019	Falmouth University
10th	21st June 2019	Bangor University
11th	2nd July 2019	University of Manchester
11th	2nd July 2019	King's College London

Chapter 3: Theory, framework and methods

12th	5th July 2019	Glasgow Caledonian University
13th	10th July 2019	University of Plymouth
14th	16th July 2019	University of Worcester
15th	1st August 2019	University of Sussex
16th	8th August 2019	Canterbury Christ Church University
17th	12th August 2019	Goldsmiths, University of London
18th	2nd September 2019	University of Edinburgh
19th	20th September 2019	University of Warwick
19th	20th September 2019	University of Winchester
19th	20th September 2019	Anglia Ruskin University
19th	20th September 2019	Birmingham City University
20th	1st October 2019	University of Cambridge
20th	1st October 2019	University of Portsmouth
21st	15th October 2019	Swansea University
22nd	17th October 2019	University College London (UCL)
23rd	31st October 2019	Royal Agricultural University
24th	15th November 2019	Plymouth Marjon University
25th	25th November 2019	Aberystwyth University
26th	29th November 2019	Cardiff University
27th	17th January 2020	University of Brighton
28th	24th January 2020	Brunel University London
29th	7th February 2020	Liverpool John Moores University
30th	14th February 2020	Buckinghamshire New University
31st	27th February 2020	Bath Spa University
32nd	2nd March 2020	University of Nottingham

The documents were collated and inputted to a document database, where each document was given a Document Identification Number (DIN) and the following information inputted: order of declarations, date of declarations, university, country, position in the People & Planet (2019) University League and whether they had signed the Climate Letter, along with additional notes. The universities are from across the UK and are distributed across the Times Higher Education (2020) rankings, with institutions in both the top and bottom ten.

3.5.2 Approach to analysis

Chapter 3: Theory, framework and methods

While 37 declarations were made, several only declared by signing the Climate Letter. This meant that only 26 documents were included in the documentary analysis as this letter counts only as one document in addition to the 25 standalone declarations. Standalone declarations were defined as documents where the main purpose was to declare a climate emergency, or which had a dedicated section within them doing so. One document per university was analysed. Documents which simply referred to the declaration or made mention of a climate emergency but whose main aim was not to make the declaration itself were not included.

The research applied a Critical Discourse Analysis (CDA) method to analyse the declarations. 'Discourse' refers to the content itself (such as words and pictures) which both shapes and is influenced by society, and the 'critical' aspect of the analysis refers to "both explaining social phenomena and [...] changing them" (Fairclough, Mulderrig and Wodak, 2013). This method of analysis was used to reveal both what is conveyed in the text and how this is done. Additionally, it explores how the text sits within and is influenced by a wider context, and how the text may in turn be influential (Oswick, 2013). CDA is particularly concerned with how language is used in relation to cultural change and as a means of exercising different types of power (Fairclough, Mulderrig and Wodak, 2013), and is therefore particularly suited to this work. As Blackledge (2012, p. 617) puts this, "language is not powerful on its own, but gains power through the use powerful people make of it". This points to how CDA analyses data beyond the text itself and is built on the idea that documents can "create new – and reinforce existing – beliefs and ideologies within society" (Grant, 2019, p.66).

The analysis follows a three-step process outlined by Oswick (2013) which addresses:

1. The text dimension
2. The discursive practise dimension
3. The social practise dimension.

The CDA was conducted in NVivo and detailed notes were generated throughout the process for each step. Documents were read before commencing the analysis to ensure familiarity with the content. Step one was the text dimension which explores in

Chapter 3: Theory, framework and methods

detail how the language in the document is used (Oswick, 2013). I coded the documents inductively over several iterations to identify recurrent topics and areas of emphasis, with codes (such as 'students' and 'plans, reports, policies') gradually being added and organised into groups. Inductive coding refers to using a data-driven approach rather than pre-existing codes or themes (Grant, 2019). The analysis then proceeded to identify broader, over-arching themes which were finalised into three main themes. 'Calls to action' were also explored as part of this first step as recommended by Grant (2019). The themes that were identified from this step therefore mainly focus on what is included in the declarations, whereas the discussion (section 4.5) explores in more detail what is missing from them.

The analysis then proceeded to step two, the discursive practise dimension. This steps back from the language used and looks at broader elements of the document, considering who the author, audience and stakeholders are, and where and when the documents were published, areas recommended to look at by Oswick (2013). This looks beyond the content and provide insights into the wider context in which documents are produced and consumed (ibid). Working through the elements listed provided additional information rather than changing the themes identified in step one.

The third step was the social practice dimension. This would seem to refer to Practice Theory, the concept that "social life and social phenomena are forms of, or rooted in, practices – the organised activities of multiple people" (Centre for Practice Theory, n.d.). However, this is not what is meant by Oswick (2013) in this context, where instead this step of CDA specifically considers power and the broader institutional and societal landscape. This dimension complements the first two steps by considering factors relevant to universities: for example, concerning reputation, their core business, and civic responsibility. This drew on insights from the literature to understand how the declarations interact with wider landscape in which universities function and how the declarations demonstrate power. The elements from this third step (social practice dimension) fed into the discussion rather than being findings in their own right.

Chapter 3: Theory, framework and methods

As the declarations were still emerging when this research project started, using Grounded Theory could have been an alternative approach. It is suited to new or understudied phenomena, focusing on a constant comparison of data as it is being collected and developing theory alongside this – using data collection rather than a literature review as the starting point (Kenealy, 2013). However, I decided not to follow this approach due to the timescale of the research.

3.6 Methodology: Participant observation (study 2)

3.6.1 Research questions and research design

A substantial amount of UK universities declared climate emergencies during 2019 and 2020, the public-facing side of which was explored in the documentary analysis. But what happened next and how can this shed further light on how universities are responding? This was addressed by undertaking participant observation of a series of internal university meetings for Research Objective 2: identify subsequent steps following the climate emergency declarations within universities.

This part of the research uses one university as a single case study to complement the public-facing declarations by providing a detailed look at an internal-facing process to address Research Question 1. It aimed to provide further insight into university culture and the actions being taken after making a declaration, which may not always be publicly visible. One case study was felt to be appropriate here for several reasons. Although multiple case studies can strengthen the research (Burton, 2000), this case study of participant observation is already situated within a wider body of research. Also, exploring an internal process in detail can be difficult and time-consuming, and there is a need to negotiate access. Therefore, it was only practically realistic to undertake one case study, but it adds value to the overall research as it provides important nuance and context to the aftermath of the climate emergency declarations. It is difficult to say with certainty whether subsequent actions that universities have taken after the declarations are a direct result of them. However, for the chosen case study, a

Chapter 3: Theory, framework and methods

group was set up as a direct result of the declaration and therefore is a clear consequence of the declaration which set this activity in motion.

Given the climate emergency declarations were such a 'live' issue and were occurring during the development of this research, I felt that it would be an excellent opportunity to experience a process while it was happening, with the aim of gaining richer data and the ability to see changes over time. Therefore, I used participant observation, a type of field research, as it enables a richer understanding of the "culture and structure of communities [which] involves the researcher engaging with the community being examined" (Fine, 2015, p. 530). Yet it differs from ethnography as the researcher does not become a member of the group they are studying, instead retaining separation between themselves and the group, and it is also a standalone piece of fieldwork rather than being one part of a broader process (Brannan and Oultram, 2012; Fine, 2015).

Participant observation is particularly suitable when an issue is not public and there is not much known about it (Jorgensen, 1989). This was relevant in this case because the declarations were a new phenomenon and although the declarations by UK universities were public, the decision-making process behind them was private. This was a key rationale for using this research method as it allowed me to see what was occurring 'behind the scenes' in contrast to the declarations which were public facing.

3.6.2 Selection of university for case study

In the climate emergency declarations, some universities identified that they would bring people together (for example, in working groups) to follow up on their declarations and decide what actions to take (see Table 4). These internal spaces could offer the opportunity to understand how universities are responding to their declarations, as well as possible details about what will be affected as part of the declaration, including culture, and the process by which decisions are made.

Table 4. Universities that identified working groups or plans in their declarations.

Chapter 3: Theory, framework and methods

University	Information from climate emergency declarations
Aberystwyth University	“The University is also establishing a Sustainability Operations Group [...] The intention is to hold the first Operational Group meeting in January 2020.”
Goldsmiths, University of London	“A comprehensive action plan will be drawn up in consultation with staff and student unions to enable the College to meet the net zero carbon emissions target over the next six years.”
University of East Anglia	“UEA operates a Sustainability Board [...] It meets quarterly and reviews the performance of the implementation teams that are charged with achieving the targets for the campus.”
University of Exeter	“Professor Juliet Osborne, Director of the Environment and Sustainability Institute, will be chairing a working group bringing together staff and students so that the University moves from declaring a climate emergency to a plan of action that we can measure by the Autumn.”
University of Sussex	“The Sustainability Committee will be leading a series of fundamental changes to our current practices.”

While the five universities shown in Table 4 made this explicit in their declarations, it was reasonable to expect that other universities would also be taking internal action but may have decided not to announce this publicly or simply did not think to include it.

Therefore, the population for the participant observation was broadened to any UK university that has declared a climate emergency and is undertaking internal action to address this in a way that would be possible to observe (for example, working group meetings). I utilised my networks to seek access to a group that was holding meetings in a UK university. The chosen university was part of the Russell Group of research-intensive universities.

The university I contacted had planned a series of internal meetings which they were happy for me to join and to observe; access was provided by the group convenor. A working group had been set up with approximately 15 people who took part in regular meetings over the course of the following year. The composition of the working group

Chapter 3: Theory, framework and methods

included professional services staff and academics from across the university, who were either involved in university sustainability or were personally concerned about the climate crisis. The approach I adopted was for the participant observation to be analysed in an anonymous manner. This approach was chosen to increase the likelihood of being able to observe the meetings and allow participants to behave as naturally as possible without my research influencing their participation. Given the nature of the research, I had no control over the number or type of participants or logistics of the meetings such as when or where they were held.

3.6.3 Data collection

Following Bell's (1969) participant observation framework, I had an overt role in a closed system. I retained my identity as a researcher and everyone present in the meetings was aware of who I was and what I was researching, having provided informed consent (see Appendix B for the information sheet and consent form). The observation took place in a closed system, as the meetings were internal and only accessible to those who had been invited.

The meetings were not recorded and therefore did not generate transcripts, as I wanted participants to feel able to speak openly. Instead, I took notes using a pen and paper or typed on a computer during the meetings and expanded on the notes immediately afterwards, following guidance on the participant observation method to write "detailed summaries of events and behaviour" as well as my own reflections (Bryman, 2016, p.440). For example, this included the tone of the meetings and participants' interactions with each other, as well as the content they discussed. I followed this format for each meeting. This method of notetaking was kept open rather than using a framework, as I did not have prior knowledge about exactly what topics would be discussed in each meeting. This was the most appropriate method of recording my observations as my role was overt, so I was able to take notes while the meetings were happening.

Chapter 3: Theory, framework and methods

I was not originally part of the group, therefore I wanted my influence on the discussions to be minimal and did not take part in any conversations apart from introductions. While I cannot be certain, my presence in the meetings did not appear to have any bearing on the discussions, with attendees appearing to take part as though I was not there.

Reflecting on my own positionality, this is likely due to two reasons. Firstly, that I am a climate change researcher and am therefore familiar with the topic area of the meetings, and secondly because I work in a university which means I am already an insider in the sector and perhaps trusted more. Additionally, as an early career researcher in a senior level meeting, it is possible that their attitude towards me being in the meeting was reflective of my more junior status. However, given that my role was quite clear, it is unlikely that this was a major factor.

I collected data from 11 meetings between March and December 2020, with meetings approximately once a month, which totalled approximately 15 hours of observation time. The first meeting I attended to begin my observations was in fact the group's third meeting; the first I was unaware of and the second I attended in February 2020 but had not yet gained ethics approval. Therefore, I used the second meeting as an opportunity to introduce myself to the group and immerse myself in the meeting space before formally beginning research. Being unable to attend the first meeting or collect data in the second meeting meant that some contextual information might be missing, such as who set up the group and how people were selected to sit on it, what their remit was and the deadline for their work. I stopped data collection after the group had submitted their findings and recommendations to the university executive team and received initial feedback.

3.6.4 Approach to analysis

Template analysis was used to analyse the observational data. It is a type of thematic analysis suitable for qualitative, textual data where a coding template is created as a key part of the process – the key difference between this and generic thematic analysis (King, n.d.). The 'template' is created from codes developed from one or multiple datasets, which are then applied to subsequent datasets and adjusted where needed.

Chapter 3: Theory, framework and methods

As it creates an initial template which is amended as analysis takes place, it means that changes can be made explicit which will bring to the surface any changes over time as the meetings progress. Also, despite Critical Discourse Analysis being used for the climate emergency declarations, this was felt to be too complex for the meeting observation data.

While template analysis allows for both inductive and deductive coding, all data was coded inductively. This meant that no codes were created prior to starting the analysis because I wanted to be led by the data rather than the previous documentary analysis data. For example, it would have been possible to use the analysis of the declarations to create codes which might have been expected to occur in the participant observation. Analysis was conducted in Nvivo.

The following steps were taken, based on recommendations from King (2013):

1. Read the data to ensure familiarity before coding
2. Create codes (that are relevant to my research objective) in the first dataset to create an initial coding template. The codes can be both:
 - a. Cross-cutting between themes
 - b. Hierarchical, with the amount of sub-themes relating to the importance of each overall theme
3. Apply the template to the rest of the dataset, adjusting where my data do not fit within the codes or themes of the template
4. Keep a record of how the template changes during each round of analysis.

While there is no set rule about when to create the template, I decided to do this after coding the data from the first meeting then adjusting after analysing each dataset, in order to more clearly see changes between each meeting. From the creation of the codes and template, I drew out several key themes which are explored in the following section.

3.7 Methodology: Interviews (study 3)

3.7.1 Research design

Exploratory interviews were used to address Research Question 2 and its underlying objectives regarding academic researchers' engagement with climate change:

Research Question 2: How does university and research culture shape the way that academic researchers engage with climate change?

Research Objective 3: Identify and explain variability of the engagement of academic researchers on climate change.

Research Objective 4: Explore the factors that encourage and restrict engagement, and how they might be overcome.

The interviews were also used to bridge issues from an organisational level such as the climate emergency declarations explored in Research Question 1 to an individual and community level. The interviews aimed to provide insights on which to base the subsequent survey (Chapter 6), forming an essential part of responding to Research Question 2 as there is minimal literature in this area. The purpose of the interviews was therefore to explore multiple topics related to university and research culture and engagement with climate change, identifying key themes to take forward into the survey.

Interviews were used for several reasons. There were topic areas that required exploration because they have not been covered sufficiently in existing literature such as what research culture means to researchers, their own engagement in climate action at work and their perceptions of university climate action. Therefore, a qualitative method was needed that could provide space for in-depth discussion. Focus groups could have been used, however this was not seen to be appropriate because the intended participants were split across multiple organisations and types of jobs, and there was a need to speak with people individually to see if there were commonalities and differences between organisations without being influenced by each other's answers.

3.7.2 Interview participants

Population and sampling

Given that Research Question 2 focuses on academic researchers in the UK, the population for the interviews could have simply been researchers at UK universities. However, this was broadened to include two populations— staff at UK universities and staff at HE focused organisations—to link to Research Question 1 and include an organisational perspective to provide additional important context. A non-probability purposive sample was chosen across both populations, as is standard for qualitative research (Hennink, Hutter and Bailey, 2020).

For the main population (staff at UK universities) which covered the majority of interviews, four universities were chosen to select participants from: Cardiff University, the University of Bristol, the University of Glasgow and the University of Leeds. Extreme case sampling was used which aims to choose notable or uncommon cases where the most helpful information can be gathered and that may help to explain other cases (Saunders, 2013). Multiple sample selection criteria were used to ensure similarities across some aspects and differences across others. These related to elements of the research objectives including climate change and research (see Table 5).

Table 5. Comparison of university features for interview sampling.

University	Cardiff University	University of Bristol	University of Glasgow	University of Leeds
Country	Wales	England (south)	Scotland	England (north)
Climate emergency declaration and position	Yes 25 th (4th in Wales)	Yes 1 st	Yes 3 rd (1st in Scotland)	No
Russell Group University	Yes	Yes	Yes	Yes
People & Planet University	46th (2:1)	11th (1st class)	85th (2:2)	22nd (1st class)

Chapter 3: Theory, framework and methods

League position (2019)				
------------------------	--	--	--	--

Firstly, the ability to gain access was an important consideration and therefore three of the universities are ones where prior connections were held. Although Cardiff University could be seen as a typical rather than extreme case in some aspects, such as its People & Planet (2019) University League position (neither excellent nor bad) and when it declared (neither very early nor late), it is my own organisation and therefore likely to be the university where the most information can be gathered. Secondly, as researchers are a focus in my research questions, universities were selected which are part of the Russell Group, a group of research-intensive UK universities.

Thirdly, three universities which had declared a climate emergency were chosen as this is addressed in Research Question 1. The University of Bristol was chosen mainly as it was the first UK university to declare a climate emergency. Similarly, the University of Glasgow was chosen as it was the first university in Scotland to declare, and third overall, though it did not do well in the People & Planet (2019) University League. The University of Leeds was chosen as it had not declared but was similar in other criteria such as being a Russell Group university and having a good result in the People & Planet (2019) University League. It could therefore provide insights into the difference that the declarations may or may not have.

Lastly, as the research focuses on UK universities, a representative geographic spread was chosen with one university from Wales, one from Scotland, and two from England (north and south). No universities in Northern Ireland had declared a climate emergency at the time of conducting the research and I therefore decided not to include any at this stage. This spread of universities was chosen to obtain a broad range of views from participants; the data from different universities was not compared with each other due to the small number of participants from each.

I also held a small number of interviews with staff in organisations with expertise on UK HE. They were chosen with the sample selection criteria that the organisations should

have an in-depth understanding of the UK HE sector. This could include, for example, networks of multiple universities or sector-wide organisations that are linked to universities' key roles and have direct links with universities. This aimed to provide a wider perspective on universities than individual university staff may be able to provide.

Recruitment

There were several sub-groups of interviewees within the sample:

- **Researchers** were essential in helping to answer the research questions due to being at the forefront of university research and therefore were the largest group of interviewees. They were sampled from all four universities across a range of seniorities, length of service, and disciplines - including those not related to climate change. This aimed to elicit a broad range of experiences with climate change and university culture and practices.
- **Staff responsible for research at a faculty level** and **senior leaders within research centres** were chosen to provide information at a broader and more structural level regarding research culture and practices, and climate change. To allow for questions around international travel, I aimed to choose research centres which conducted work internationally. None of the research centres were climate change focused. While I originally intended to include one research centre which focused on climate change to allow for a comparison between the two areas, it was not possible to obtain an interview.
- **Members of universities' sustainability teams** were chosen to provide in-depth knowledge about climate change action as well as oversight of sustainability issues. They were sampled from all four universities.
- An **Executive team member** was interviewed from one university that had declared a climate emergency to provide organisational level insight on climate change action. They were involved in climate change or sustainability issues affecting the university.
- **Staff members from external organisations in the HE sector** were chosen to provide a broad overview of climate change action and research in universities at a sector level.

Chapter 3: Theory, framework and methods

I followed Alvesson and Ashcraft's (2013) guiding principles of representativeness and quality for identification of participants. The broad range of participants across academic and non-academic roles, different subject areas and positions aimed to ensure representativeness. Regarding quality, participants were chosen who appeared to have relevant insights into the topic of my research.

I aimed to interview approximately 25-30 participants, the number suggested by Saunders (2013) in order to reach saturation (occurrence of similar responses) for populations which are heterogeneous. The interviews reached saturation, with a total of 22 interviews taking place (see Table 6). This was slightly lower than the amount aimed for due to availability of potential interviewees, however, this slightly lower number did not have a negative impact.

Table 6. Interview participants.

Number of participants	Type of organisation	Type of participants
11	University	Researchers
2	University	Senior leaders of research centres or research institutes
2	University	Staff responsible for research at a faculty level
4	University	Sustainability team
1	University	Executive team member
2	External organisation in the HE sector	External HE sector specialist with sector-wide knowledge

I used a mix of confidential and anonymous interviews. Anonymous interviews were conducted for researchers to ensure they were unable to be identified from the data. The interviews with all other participants were confidential as it was not possible for them to be totally anonymous. Those participants were made aware that there is the potential to be identified given a focus on interviewing people with particular professional responsibilities from small sample groups.

Chapter 3: Theory, framework and methods

The sample of participants was not refined as data collection took place – all participants were selected in advance due to time constraints. For the external organisations in the HE sector (i.e., non-universities), participants were identified by browsing staff teams to see who would be most likely to be able to provide an overview of the sector. For the universities, I wanted to recruit participants who would be able to provide different perspectives and knowledge of both climate change and research, as well as from across different seniorities and subject areas. Therefore, I identified several different groups to recruit from as outlined above. They were identified by browsing publicly available staff lists on university websites. Diversity of knowledge and experiences was important within as well as between groups, therefore I identified those with different professional characteristics from the information available on their public profiles (such as department, subject area, seniority, length of service), as well as demographic differences based on observable characteristics rather than being self-declared by participants (perceived age, gender and ethnicity).

All participants were contacted by email. Almost all universities have publicly available profiles and contact details for their academics, therefore accessing this information for most participants was straightforward. Where personal contact information was not available, for example sustainability teams, contact was made via a general email address. Participants read an information sheet and provided informed consent before taking part (see Appendix C). Interviews were conducted between November 2020 and February 2021.

Trust and reflexivity

Building trust with participants was an important consideration for the interviews as it influences how researchers are viewed and what the engagement during data collection will be like (Hennink, Hutter and Bailey, 2020). As I work at a university and am a researcher, this meant that I shared one or both characteristics with most interviewees. Even for the participants working in the wider HE sector outside of universities, there is a shared understanding of the context in which I and the participants work.

3.7.3 Interview protocol design

An interview protocol was created for each of the different groups of participants. To answer the overarching Research Question as well as Research Question 2 specifically, all interview protocols followed a similar structure and included questions about research and researchers, though some questions differed depending on the type of participant. The interview protocol included in Appendix C is an example of the questions used for researchers but does not contain the entire set of questions for all participants. Following a semi-structured approach, lists of questions were created as a guide but additional questions were also asked to follow up on interesting and useful information that participants provided. This meant that there was flexibility in responding to participants as well as ensuring that key questions for the research were addressed. This approach allowed for themes to occur that the participants saw as important or relevant to the interview questions that were not originally included, ensuring that participants could provide their own points of view and experiences (Alvesson and Ashcraft, 2013).

Some literature about organisational culture, universities and sustainability was used as a starting point for creating questions (for example, Bien and Sassen, 2020; Deem and Lucas, 2007; Tierney, 1988) and the practical framework outlined in Chapter 3 (Bauer *et al.*, 2020; Niedlich *et al.*, 2019). Some questions were also shaped by theory, for example, exploring what shapes organisations and how climate action is perceived. However, as the interviews were exploratory due to little previous research in this area, most of the wording of the questions was newly created and aimed to generate insights that could be used for the next phase of the research. This meant that some of the questions were quite broad, for example, “what does research culture mean to you?” and “what are the most important influences on the way that you carry out or conduct your research?”, as I wanted participants to offer definitions and insights (some participants did in fact say that they were “difficult” or “big” questions to answer). I was aware that participants might find some of the questions difficult to answer, therefore I made sure that I had prepared prompts and alternative ways of asking some of the questions in case this occurred.

Chapter 3: Theory, framework and methods

The interviews were split into three sections. Firstly, the interview oriented the participant by introducing the researcher, explaining that there is no right or wrong way to answer the questions (Roberts, 2020) and aiming to establish rapport (Alvesson and Ashcraft, 2013). Introductory questions such as “could you tell me a bit about the research you do/about your role?” were asked to ease participants into the interview format whilst obtaining relevant information (Castillo-Montoya, 2016). Secondly, the main part of the interview varied depending on the type of participant, though consisted of a mix of general questions about research (for example, “what does research culture mean to you?”) as well as questions specifically related to climate change. Most participants were asked climate-related questions such as “do you think all universities have a responsibility to act on climate change?” and “as a member of the university’s research community, do you think there are particular things you can do or particular responsibilities you have to help tackle climate change?”. The interviews concluded by asking participants if they had anything further to add to ensure no important information was missed (Alvesson and Ashcraft, 2013).

All interviews were conducted by online video call due to Covid-19 travel and social distancing restrictions at the time. The main benefits of this were reduced cost due to lack of travel and accommodation and increased time spent on the research which would otherwise be spent traveling. This also enabled more interviews to take place than may have otherwise been possible. Using online video interviews rather than in-person is unlikely to affect rapport (Weller, 2017) and can still result in successful interviews (Seitz, 2016). Remote working has also become more common since the Covid-19 pandemic. Limitations including potential technical issues and a decreased ability to see body language were addressed by following Seitz’s (2016) checklist for video interviewing such as testing the internet connection prior to the call and using non-verbal cues to show understanding.

3.7.4 Approach to interview analysis

Chapter 3: Theory, framework and methods

Thematic analysis was used for the interviews, with some inspiration taken from discourse analysis. Thematic analysis involves the creation of broad themes from multiple codes which identify similarities, differences and areas of common occurrence across the data (Fugard and Potts, 2019). Discourse analysis is an approach which entails “deconstructing and critiquing language use and [its] social context” (Miles, 2012, p.2), exploring not only what participants think but what is accomplished by what they say (Goodman, 2017). Discourse analysis tends to focus either on the minutiae of the language itself or, more commonly, a sociopolitical angle (Miles, 2012) which can in turn entail specific approaches such as Critical Discourse Analysis (CDA) - as used for the climate emergency declarations in Chapter 4. Thematic analysis was felt to be the most appropriate approach for the interviews because identifying and understanding key themes arising from the questions was essential to developing the survey. However, discourse analysis was also drawn upon to be attentive to situating the results in their wider social context. For example, how participants’ perceptions of and engagement with climate change is enabled or restricted by their institution or wider cultural expectations of being a researcher. This context is an essential part of addressing Research Question 2 as it aims to understand university and research culture as well as individuals’ responses.

Both thematic analysis and discourse analysis processes can be quite broad and unclear (Goodman, 2017), therefore I chose to use the following approach based on Taylor (2013) which relates to discourse analysis but follows steps similar to thematic analysis. I have incorporated additional discourse analysis guidance from Gee (2014) as step 5:

1. Read interviews before coding to ensure familiarity with the data
2. Undertake initial coding: Mark anything that seems interesting or relevant in the context of existing literature, previous research, and research questions; create connections between and within transcripts by looking at how participants answer the same questions and how they differ (or not)
3. Develop coding in further detail: Code for aspects that are not explicitly asked about in the questions

Chapter 3: Theory, framework and methods

4. Organise under initial themes
5. Use the following areas to draw out additional insights, rather than organising the analysis under these strict categories. Gee (2014, p.35) suggests questions to ask during analysis for each question, for example “how does this piece of language privilege or disprivilege specific sign systems (e.g., Spanish vs. English, technical language vs. everyday language, words vs. images, words vs. equations, etc.)?”
 - a. Significance
 - b. Practices
 - c. Identities
 - d. Relationships
 - e. Politics (culture)
 - f. Connections
 - g. Sign systems and knowledge
6. Look again at patterns, links, why these are happening and what they mean/implications
7. Link back to research questions, literature and theory.

The majority of the analysis was conducted in Nvivo, with step 5 conducted manually then brought together to create final themes. Step 5 suggested by Gee (2014) is particularly complex and during analysis it became clear that some of the areas were less relevant than others for my research. Therefore, although this step of the analysis was undertaken, I did not end up drawing on it significantly in the results. Instead, there were key themes that occurred during the analysis of steps 1-4 and I used the analysis from step 5 to supplement this where appropriate. Steps 6 and 7 relate to interpretation of the results, which is part of the discussion (Chapter 7). The transcripts were mostly analysed independently to draw out overall themes, though there were findings that related to specific groups such as researchers or sustainability staff.

3.8 Methodology: Survey (study 4)

3.8.1 Research questions and research design

Chapter 3: Theory, framework and methods

Following on from the interviews, this chapter continues to address Research Question 2 and its underlying objectives to explore how academic researchers engage with climate change, specifically looking at variability in their engagement and what influences this:

Research Question 2: How does university and research culture shape the way that academic researchers engage with climate change?

Research objective 3: Identify and explain variability of the engagement of academic researchers on climate change.

Research objective 4: Explore the factors that encourage and restrict engagement, and how they might be overcome.

The results from the interviews (Chapter 5) were used as the basis to develop the survey because prior to the interviews taking place, there was minimal research about the topics I wanted to explore. The survey design therefore mainly built on findings from the interviews such as researchers' level of engagement with climate change, their knowledge of university climate action, and responsibility for climate action. Since conducting the interviews, there has been a small amount of additional literature published that was relevant to draw on for the survey (such as McCowan, 2020; Wellcome and Shift Learning, 2020). However, some literature was only published after the survey was developed and therefore was not used to develop the questions (such as Blanchard *et al.*, 2022; Espinosa *et al.*, 2023; Leal Filho *et al.*, 2023, Urai and Kelly, 2023).

A survey was the most appropriate research design because the interviews uncovered valuable in-depth insights from participants which needed to be explored on a larger scale to address Research Objectives 3 and 4 in more breadth and depth. Using a survey allowed me to do this as I could elicit responses from a higher number of participants across more universities, as well as reaching those at different career stages or working in different subject areas.

3.8.2 Survey administration and participants

The survey was self-administered, where participants completed the questions themselves, using the online Qualtrics survey system. This approach was chosen as the most practical way to reach a high number of participants across a broad geography. The survey was anonymous, as identifiable information was not needed from participants, though some basic demographic information was collected (see section 3.8.3). Participants read an information sheet and provided informed consent before starting the survey (see Appendix D1).

The population for the survey was researchers at UK universities. The aim of this broad approach was to get participants from across different disciplines, career positions and level of professional involvement with climate change. 'Researchers' were clearly defined at the start of the survey in the introductory questions so that participants knew whether they were eligible to take part (see section 3.8.3). While there are 161 universities in the UK (Amber *et al.*, 2020), Universities UK provided the clearest list of UK universities to work from and use. This is because the Amber *et al.* (2020) data is from the Higher Education Statistics Agency (HESA) where a conclusive list of universities is not easily accessible. The Universities UK list shows that they had 140 member universities at the time the research was undertaken (though this has increased to 142 at the time of writing; Universities UK, n.d.b).

HESA data shows that in 2020/21 there were 150,010 research staff and 104,965 PhD researchers (HESA, 2022a; HESA, 2022b), which provides an indication of the very large population size for this research. While participants from other UK universities were eligible to complete the survey, only universities from the Universities UK list were directly contacted. The total number of researchers at the specific universities contacted was not calculated due to practical reasons and therefore the overall population size of researchers is unknown.

Existing surveys of academics showed a large variation in the number of participants, from less than a hundred to over a thousand (Guthrie *et al.*, 2017; Leal Filho *et al.*,

Chapter 3: Theory, framework and methods

2021; Lozano *et al.*, 2015). Therefore, a conservative sample size of 200 was aimed for (the results far exceeded this expectation, with 1,853 responses).

The process of distributing the survey involved a large amount of meticulous, procedural work over several months. The sample design was a convenience stratified sample, in line with similar research with UK academics by Fullwood, Rowley and Delbridge (2013) who approached Heads of Departments in particular subject areas to ask for permission to share their survey directly to staff. For this research, participants were recruited through Heads of Departments (or equivalent) at all the 140 UK universities on the Universities UK membership list. However, the email asked Heads of Departments to forward the survey to researchers in their department rather than asking for permission to contact the researchers directly. The aim of this approach was to ensure the survey came from an internal, senior contact who already had a close relationship to their colleagues rather than an external 'cold contact'. Other researchers have emailed approximately 10,000 academics for a survey (Whitmarsh *et al.*, 2020) and it is noted that email addresses tend to be publicly available on universities' websites. However, this approach would not have been feasible for my research as I personalised the emails and the number of researchers (over 250,000) was too large to contact and collate information for.

The survey was only shared via direct email. It was not shared on social media or by any other means, to ensure that the sample would not be skewed towards my research contacts (who mainly work in climate change) or those who use social media. Given the large number of universities, departments covered a very broad range of topic areas such as Exercise Sciences, Criminology, Film and Media, Theology, Infection Biology, and Management. A total of 3,759 emails were sent to Heads of Departments or equivalent (see Table 7). A template was created, though each email was personalised and sent manually to encourage positive responses. Follow-up emails were sent four to six weeks after initial contact to universities where there were less than 20 responses. The overall response rate from Heads of Departments or equivalent was 10.7%. A spreadsheet was created to keep track of the survey distribution. Upon publication of the research (Latter, Demski and Capstick, 2024a), I contacted everyone who offered

Chapter 3: Theory, framework and methods

to share the survey with their colleagues to thank them again and provide a link to the published research. The survey was open for just under three months, from 11th May until 4th August 2022.

Table 7. Number of emails and responses for participant recruitment.

Emails to Heads of Departments or equivalent	3,759
(Initial emails)	(2,339)
(Follow-up emails)	(1,420)
Heads of Departments or equivalent who agreed to share the survey with their colleagues	402 (from 120 universities)

3.8.3 Survey development

A variety of question types were used in the survey to most appropriately address the topics chosen. The general survey development is addressed below before outlining each section of the survey in detail.

Several general rules outlined by Bryman (2016) were adhered to when designing the survey. Attention was paid to question design to ensure the following were not used: double-barrelled questions and answers (unclear both how participants should answer and how the researcher should interpret the answer), very long questions (attention span and comprehension issues), very general questions (leading to a lack of specific data), leading questions (raises ethical issues), questions that include negatives (can be unclear how participants should respond), and technical or ambiguous terms (difficulty in comprehension).

Another consideration was whether to include 'don't know' as a potential response to questions. While this may reflect genuine responses, it can be due to participants becoming fatigued and more likely to choose this option, or it could reflect a lack of effort in participants' responses (Ben-Nun, 2011; Holbrook, 2011). The survey also includes three Likert-scale questions with a middle 'neutral' option of 'neither disagree

Chapter 3: Theory, framework and methods

nor agree' or 'neither irrelevant nor relevant'. Survey participants can interpret this neutral option in different ways, such as 'it depends' or use it as a 'dumping ground' if they are unsure how to respond, though it can also be used as a genuine response (Chyung *et al.*, 2017). While the authors suggest that the topic and participants could inform whether to use a neutral option, for example if participants are familiar with the subject area (*ibid*), the survey aimed to collect responses from a broad range of researchers who might have different levels of knowledge and involvement with the topic area. Therefore, I decided to keep the neutral options in the Likert scales and not to include 'don't know' as a response option.

The survey tried to strike a balance between making it easy for participants to answer questions and allowing space for participants to provide responses to the topics in their own words. Mainly closed-ended questions were used as they were easier to both process and answer, and they also increase the comparability of the answers (Bryman, 2016). Multiple choice questions were used as they are easy both for participants to use and for analysing.

Likert scales are commonly used to measure attitudes (Bryman, 2016) therefore they were appropriate for this research and were used for multiple questions. 7-point Likert scales were used for most scale questions in the survey (rather than 5-point or otherwise) as research suggests they are more suitable, including because they more accurately align with how participants want to respond to the scale (Finstad, 2010; Rahi, 2017). For Likert scale questions where statements were used, mild or neutral language was not used to help mitigate against the possibility of participants all agreeing with them (Gracyalny, 2018).

Open text boxes were used in two different ways. Several multiple choice questions included an 'other' option for participants to select and provide a free text answer, in case any of the options did not fit how they wanted to respond, helping to ensure that the responses were accurate. There were also questions which were solely open text boxes. These helped to elicit detailed and participant-specific information, which would

Chapter 3: Theory, framework and methods

not have been possible using other types of questions. Responses from open text boxes were analysed using content analysis (see section 6.3.3).

A single ranking question was used to measure the perceived effectiveness of different actions. While a limitation of ranking questions is that there is no information about how participants perceive the distance between each rank, it is a commonly used way to distinguish between different items (Bourhis, 2018).

The survey was piloted with five university researchers in May 2022 to check respondents' understanding of the questions and answer scales, and to identify any problems. Pilot phases are useful to identify any questions that are difficult to understand or could be misinterpreted, whether the order of questions is correct, as well as any technical errors (Bryman, 2016). In this case, minor adjustments to question wording were made to the survey following the pilot.

The final survey was composed of four sections, with 25 questions in total and took on average 17 minutes to complete (not including the top and bottom 1% response times). The survey questions are explained in detail below regarding what they are based on and why they were asked. The interview questions and results (Chapter 5) also greatly influenced the survey questions. A clean version of the survey is included in Appendix D2.

Survey section 1

The first section of the survey consisted of five introductory questions. Two multiple choice, single answer questions were used to confirm that participants were eligible to complete the survey. Question 1 was based on a survey question by Gopalakrishna *et al.* (2022) and question 2 was based on a survey question by Guthrie *et al.* (2017).

Q1: Have you engaged in research in the last three years? This could be empirical research (where data is collected and/or analysed) or non-empirical (e.g. narrative review, design activities). Response options were: Yes (1), No (2). Selecting 'No' ended the survey for the participant.

Chapter 3: Theory, framework and methods

Q2: Which of these institutions is your primary affiliation? Response options were a list of the 140 universities (1-140), and a free text box if their institution was not listed.

This was followed by three multiple choice, single answer questions to find out demographic information that would help to see whether there were any important differences in discipline, climate involvement, and career level between how participants answered the other survey questions. Question 3 was based on a survey question by Guthrie *et al.* (2017). Question 4 was based on a survey question by Whitmarsh *et al.* (2020). Question 5 was newly created for the survey.

Q3: Which of the following best describes the discipline that you mainly associate yourself with? Response options were: Medicine, health and life sciences (1), Physical sciences, engineering and mathematics (2), Social sciences (3), Arts and humanities (4).

Q4: Does your work involve researching or teaching on climate change? Response options were: Yes - this is a major part of my work (1), Yes - this is a minor part of my work (2), No (3).

Q5: How would you describe your current position? Response options were: Early-career (1), Mid-career (2), Senior/professor (3), Other (please specify) (4. Open text box).

Survey section 2

The second section focused on climate change within universities. This started with two questions about level of agreement with a series of statements to find out participants' perceptions of climate change within their universities (first order beliefs) as well as what they think others' perceptions of climate change within their universities are (second-order beliefs). The order of the statements was randomised. A 7-point bipolar Likert Scale was used for the response options: Strongly disagree (1), disagree (2), somewhat disagree (3), neither disagree nor agree (4), somewhat agree (5), agree (6), strongly

agree (7). Both questions had some statements which were based on a survey by Leal Filho *et al.* (2021), though some statements were newly created.

Q6: To what extent do you agree with the following statements?

- a) My university is not doing enough to address climate change in terms of its own impacts and emissions
- b) My university is not doing enough to address climate change in terms of its research activities
- c) My university's processes incentivise low-carbon approaches to research
- d) Research funding processes incentivise low-carbon approaches to research
- e) I want to address climate change through my role in the university
- f) I do not know how to address climate change as part of my role in the university
- g) I receive enough information from my university about what it is doing to address climate change
- h) My university provides me with enough information about how to conduct my research in a low-carbon way
- i) In order to properly address climate change, it is necessary to change the research culture in my university

Q7: To what extent do you agree with the following statements?

- a) Addressing climate change is a priority for my university in terms of its own impacts and emissions
- b) Addressing climate change is a priority for my university in terms of its research activities
- c) Addressing climate change is a priority for researchers in my university
- d) Other researchers in my university do not know how to address climate change in their roles
- e) Other researchers in my university are reluctant to address climate change in their roles

Chapter 3: Theory, framework and methods

This was followed by a question to find out participants' perceptions of who they think is responsible for addressing climate change in universities (in general, not their own university), to explore how they see the responsibility of researchers compared to other stakeholders. It used a 3-point bipolar Likert Scale and the order of the statements was randomised. The question was based on a survey question by Wellcome and Shift Learning (2020).

Q8: Which groups do you think should be responsible for addressing climate change in universities?

- a) Early career researchers
- b) Senior academics and researchers
- c) Research institutions themselves (e.g. universities and colleges)
- d) Funding bodies (e.g. research councils)
- e) Publishers
- f) Government and policymakers
- g) Other (please specify): [Open text box]

Response options were: Low responsibility (1), medium responsibility (2), high responsibility (3).

The following question was included to understand people's level of knowledge about university climate action. An open text box allowed for participants to affirm (or not) whether they knew anything about what their university is doing, but also provide detail about the extent of their knowledge and particular university initiatives. This question was newly created for the survey.

Q9: What do you know about what your university is doing to address climate change?

The final question in this section was newly created for the survey to find out participants' perceptions of universities' climate emergency declarations and whether they think the declarations make a difference. It used a unipolar 4-point Likert Scale.

Q10: Some universities have declared climate emergencies, stating their commitment to reducing carbon emissions. To what extent do you think this is making a difference in addressing climate change at universities?

Response options were: Not at all (1), Only a little (2), Moderate amount (3), A great deal (4).

Survey section 3

The third section focused on researchers' own engagement with climate change. The first two questions were included to find out how participants perceive climate change with regards to their discipline and their job role, and therefore how difficult it may be to engage them with climate change. A 7-point bipolar Likert Scale was used for the response options: Highly irrelevant (1), Irrelevant (2), Somewhat irrelevant (3), Neither irrelevant nor relevant (4), Somewhat relevant (5), Relevant (6), Highly relevant (7).

Q11: How relevant do you think your subject area is for addressing climate change?

Q12: How relevant do you think your role as a researcher is for addressing climate change?

These were followed by a multiple choice, single answer question that was newly created for the survey to understand participants' perceptions of the impact of their work on climate change.

Q13: In your role as a researcher, do you think your work has or could have a positive impact in addressing climate change? Response options were: Yes (1), No (2), Not sure (3). Participants that chose 'No' skipped question 14.

The next question was a rank order question from 1 (highest impact) to 10 (lowest impact) to understand how participants felt they could best use their role at work to address climate change. While it was newly created for the survey, the statements were

Chapter 3: Theory, framework and methods

based on a list of climate change activities within universities by McCowan (2020). The order of the statements was randomised.

Q14: How do you think you could use your role to positively address climate change? Please rank the following items, with 1 being the highest impact and 10 being the lowest impact. Drag and drop each item to rank them.

- a) Professional practice (applying sustainability principles to your work)
- b) Personal action (using knowledge gained in your role to inform your personal actions)
- c) Research and scholarship (directly researching about climate change)
- d) Teaching others (directly teaching about climate change)
- e) Application of knowledge/innovation (practical implications of your research beyond your institution)
- f) Secondment opportunities
- g) Community engagement (working with people or organisations outside of the university)
- h) Campaigning and mobilisation
- i) Awareness raising with the public
- j) Campus sustainability (engaging in university climate change processes)

A unipolar, 5-point Likert Scale question was then used to understand the extent to which participants were concerned about climate change and therefore place their other answers in a wider context. The question was used directly from British Social Attitudes: The 35th Report (Phillips *et al.*, 2018).

Q15: How worried are you about climate change? Response options were: Not at all worried (1), Not very worried (2), Somewhat worried (3), Very worried (4), Extremely worried (5).

A bipolar, 4-point Likert Scale was used for the final two questions in this section. The response options were: Not at all (1), Only a little (2), Moderate amount (3), A great

Chapter 3: Theory, framework and methods

deal (4). Question 16 was newly created for the survey. It aimed to understand whether participants' personal feelings affect them at work and therefore to gauge their current level of engagement. Question 17 was based on a survey question by Kotcher *et al.* (2021) and aimed to understand whether participants think advocacy is appropriate, indicating the extent to which they may be likely to engage in or support this activity.

Q16: To what extent do your own views about climate change affect your practices, choices and activities at work?

Q17: To what extent do you think it is appropriate for researchers to advocate for university action on climate change? University action relates to universities' own impacts and emissions, including research and teaching.

Survey section 4

The fourth and final section focused on challenges and opportunities within universities. A bipolar, 4-point Likert Scale was used for the first question and was newly created for the survey, as was the follow-up question. This aimed to identify whether there was an appetite for greater climate action from researchers in their university roles, and if not, why not.

Q18: To what extent do you want to do more on climate change within your university? Response options were: Not at all (1), Only a little (2), Moderate amount (3), A great deal (4). Participants that chose 'Only a little', 'Moderate amount' or 'A great deal' skipped question 19.

Q19: Why do you not want to do more on climate change? Response option: open text box.

The next two questions aimed to identify whether participants faced any barriers to climate action in their role at work. Question 20 was multiple choice, single answer and was newly created for the survey. Question 21 was multiple choice, multiple answer,

Chapter 3: Theory, framework and methods

and the order of the statements were randomised. It was based on a survey question by Leal Filho *et al.* (2021).

Q20: Do you face any barriers to doing more on climate change?

Response options were: Yes (1), No (2), Not sure (3). Participants that chose 'No' skipped question 21.

Q21: In your view, what barriers do you face in doing more on climate change through your role in the university? Please select all that apply.

- a) Lack of staff expertise
- b) Lack of staff interest
- c) Lack of student interest
- d) Inflexible research frameworks
- e) Inflexible university processes
- f) Lack of agency or power
- g) Lack of materials/resources
- h) Lack of professional development
- i) Lack of projects on climate change
- j) High workload
- k) Pressure to travel
- l) Uncertainty about what actions to take
- m) Lack of institutional support
- n) Lack of legislative initiatives / requirements
- o) Lack of funding for climate related research
- p) Too much professional risk
- q) Other: (please specify)

The following question used the same format and answers as question 21, though adjusted slightly to reflect incentives or enablers rather than barriers. This aimed to find practical solutions to any barriers that participants highlighted in the previous question or elsewhere in the survey.

Q22: In your view, what would incentivise you to do more on climate change through your role in the university? Please select all that apply.

- a) Greater staff expertise
- b) Greater staff interest
- c) Greater student interest
- d) Different research frameworks
- e) Different university processes
- f) Greater agency or power
- g) Different materials/resources
- h) More professional development
- i) More projects on climate change
- j) Reduced workload
- k) Less pressure to travel
- l) Knowledge of what actions to take
- m) More institutional support
- n) More legislative initiatives / requirements
- o) More funding for climate related research
- p) Less professional risk
- q) Other: (please specify)
- r) Nothing would incentivise me to do more [exclusive answer]

The final three questions used open text boxes to allow participants to provide thoughts and ideas in their own words. Whilst using multiple open text boxes meant this would generate a very large volume of qualitative data that could be difficult to manage, it was an important opportunity to hear directly from researchers on these topics. Questions 23 and 25 were newly created for the survey, while question 24 was based on a survey question by Wellcome and Shift Learning (2020).

Q23: In your view, what opportunities are there for your university to better incorporate climate change into your research practices? By research practices, we mean anything that you do as a researcher as part of your role.

Q24: As an individual, what actions do you think you could take to better incorporate climate change into your research practices?

Q25: Do you have anything else you would like to add?

3.8.4 Survey prize draw

To encourage survey responses and thank them for their time, all participants that completed the survey had the opportunity to enter a prize draw to win a £100 voucher. The following steps were taken to administer the prize draw:

1. The data spreadsheet (consisting of names and email addresses – kept separate to the survey data) was downloaded and each entry numbered
2. An online random number generator was used to identify the winning participant number
3. In line with approval from my university's Ethics Committee, personal data was then deleted once the winner had been contacted and they had confirmed they had received the voucher.

3.8.5 Survey data preparation

Prior to analysis of the results, the survey data was 'cleaned'. This is a quality checking process involving checking coding and extremes or issues in the data to ensure that responses are genuine and accurate (Huxley, 2020). An overview of the steps taken are listed below.

1. Responses were removed where participants:
 - a. Had not ticked the box for question 26: "Please tick this box to confirm that you would like to submit your answers." (730 responses removed)
This was to confirm that they had completed the survey and were happy to submit their answers.
 - b. Had listed a non-UK university for question 2.1 or where no university was chosen/written at all (4 responses removed)

Chapter 3: Theory, framework and methods

2. Responses were recoded for:
 - a. Question 2, where participants' university was put in the open text box but was on the list
 - b. Question 5, where the open text responses fitted one of the answer options
 - c. Questions 11 and 12, which were originally numbered incorrectly in Qualtrics. They were amended to match up to the text responses.

The standard deviation was calculated for questions with the same response scale but where there were expected to be differences in participants' responses. Where the standard deviation was 0, this indicated that all responses were the same – an example of 'straightlining', a potential data quality issue as it can indicate that participants may not be fully engaged with the survey. These participants' responses to other questions were checked and when no issues were found, no responses were removed. Also, the time that participants took to complete the survey was checked, along with any 'nonsense' text in the open text boxes. No responses were removed for either of these reasons as no participants responded unrealistically quickly and the comments in the text boxes were all legitimate.

Responses were amended where participants had provided non-anonymous information in some of the open text box responses (for example, email address, job title, name, other identifiable information). Some responses were removed for question 10, where participants had stated in an open text box that they didn't know the answer but 'don't know' was not a response option.

A handful of researchers stated in open text box responses that some of their answers to previous questions, where the option 'neither agree nor disagree' was available and selected, were actually a proxy for 'don't know'. Where possible, their responses to these questions were removed; where it was unclear, they were kept. Therefore, it may be that other researchers also did not know and selecting this answer could be read that way too. The possibility that respondents could use the 'neutral' option in the Likert

Chapter 3: Theory, framework and methods

scale questions in this way was highlighted earlier in this section, but after considering the literature, I decided not to include a 'don't know' option.

3.8.6 Approach to qualitative data analysis

I analysed the qualitative survey data (open text box responses) using content analysis in Excel. Content analysis uses categories to code and quantify data (Bryman, 2016). This was an appropriate method as it enabled a very large amount of data (over 5,000 comments) to be analysed and understood in a manageable way. Using another method such as qualitative thematic analysis, which involves the formation and explanation of broad themes based on creating codes to identify differences and commonalities across the data (Fugard and Potts, 2019), would have worked but been much more challenging given the volume of data. Most of the coding was inductive - codes were created and adapted as analysis took place, though content analysis tends to use existing categories to deductively code the data (Bryman, 2016). However, some of the coding was deductive where there were particular elements of the data that I already knew I wanted to draw out, for example how much knowledge researchers had about their university's climate action.

3.8.7 Approach to quantitative data analysis

I analysed the quantitative survey data using SPSS. Below, I outline the statistical tests used.

Main results

To analyse the main results, statistical tests were required for question 14 as it was a rank question. Firstly, a Friedman test, a type of non-parametric test used for ordinal data with one sample, was conducted on the data to identify the mean rank of each item. A post-hoc test then had to be conducted to identify where the significant differences were, i.e. between which items (see Appendix D4 for full details).

Professional differences between researchers

Chapter 3: Theory, framework and methods

Statistical tests were required to identify how researchers with different professional characteristics (subject area, climate/non-climate researcher, career stage) may have responded differently to the survey questions. To do this, I developed a series of hypotheses and exploratory questions (see section 6.3.4).

As I use the same data from the survey questions multiple times, I needed to address this in the results of the statistical analysis. When conducting multiple statistical tests on the same dependent variable, there is a greater likelihood of finding a statistically significant result – known as a Type I error (Abdi, 2012). To address this, there are corrections that should be made to the test results. One of these corrections is the Holm-Bonferroni method, which I used for all hypotheses and exploratory questions (see Appendix D5 for a table with further details). The Holm-Bonferroni method is a sequential and more powerful adaptation of the Bonferroni correction, where the p-values from the tests are ordered from smallest to largest the formula below is used (ibid):

$$\frac{\textit{Target alpha (significance) level}}{\textit{Number of tests – rank number + 1}}$$

Where multiple statistical tests were not taken on the same dependent variable, a 0.05 alpha (significance) level was used as this is standard in statistics (Field, 2018).

To explore how researchers with different professional characteristics may have responded differently, I identified several areas of the data where specific hypotheses can be formulated. These were developed from a combination of reviewing existing literature about universities and climate change (Chapter 2) and looking at the results from the documentary analysis (Chapter 4) and interviews (Chapter 5). I also identified questions of an exploratory nature which were not planned in advance. These investigated relationships between survey questions where interesting results may arise but there was not previous evidence from the literature or my other research studies to support this. I have split the analysis into two sections: 1) Institutional factors and 2) Individual factors. I split the analysis in this way as some hypotheses and exploratory

Chapter 3: Theory, framework and methods

questions relate more clearly to universities themselves (institutional factors), whereas others relate to researchers' engagement (individual factors).

The analysis for the institutional factors was based on exploratory questions which were not planned beforehand and is therefore explained in the results in section 6.3.4.

Individual factors: subject area

I expect to see a relationship between climate change expertise and researchers' perceptions of climate change knowledge, relevance, worry and action. Previous research found that climate change researchers were more aware and concerned about the impact of flying than non-climate researchers (Whitmarsh *et al.*, 2020).

To explore data related to the second section (individual factors), I firstly had to identify the most appropriate statistical tests. Most of the hypotheses relate to survey questions which use 7-point Likert scales: bipolar for hypotheses 1a (Q6f), 1b (Q7d), 2a (Q11) and 2b (Q12), and unipolar for hypothesis 4 (Q15). These can be treated either as ordinal or interval variables (Bryman, 2016). Therefore, although this leads to uncertainty about whether to analyse Likert-scale data using parametric or non-parametric tests, research comparing *t*-tests and Mann-Whitney-Wilcoxon tests using 5-point Likert scale data suggests that both have similar power and there is no concern about Type I errors (de Winter and Dodou, 2010). However, some evidence suggests that for 7-point Likert scales which are particularly skewed, Mann-Whitney-Wilcoxon tests are more appropriate (Nanna and Sawilowsky, 1998). This meant I had to await the survey results for the hypotheses using these questions before being able to check how the data was distributed and therefore which tests to use. This is explained in section 6.3.4.

Hypothesis 3 relates to a survey question (Q13) which uses a multiple choice, single answer question (nominal data), which suggests that a Chi-square test is appropriate (Bryman, 2016). Field (2018, p.857) states that "the nature of a significant association can be clear from just the cell percentages or counts", though where there are three or

Chapter 3: Theory, framework and methods

more variables, z-tests are required to identify between which variables the significance is.

There are also several exploratory questions resulting from the data. These are not specific hypotheses as they have not been formulated from existing literature or the results from the documentary analysis and interviews. This is because there is a lack of existing literature exploring researchers' perceptions and engagement with climate change related to their subject areas. Also, while the interviews for this research were conducted with researchers from different disciplines, they did not explore differences between subject areas. Therefore, these are areas where it is useful to understand whether there is a relationship in the data as this is not currently known. These were developed after obtaining the survey results and are therefore explained in section 6.3.4.

Individual factors: career position

The second broad question to explore in the survey data relates to researchers' career position. As noted previously, there are no specific hypotheses that can be drawn from previous literature or my other research studies, but there are questions which could elicit useful information about the relationship between career position and other factors. As above, these were developed after obtaining the survey results and are therefore explained in section 6.3.4.

3.9 Next steps

This chapter has outlined my overall approach to the research, drawing on critical theory and outlining a practical framework which will bring together the separate strands of research. I have also outlined my overall methodological framework and the methods for each of the research studies. The following chapters will now detail the empirical research. Chapter 4 explores Research Question 1, using documentary analysis to explore universities' climate emergency declarations and a case study participant observation of internal university meetings following one of these declarations. Chapters 5 to 7 then explore Research Question 2. Chapter 5 focuses on

Chapter 3: Theory, framework and methods

interviews, mainly with university staff, and Chapter 6 details a UK-wide survey of researchers. There is then a joint discussion of the interviews and survey in Chapter 7.

Research Question 1

How do universities' climate emergency declarations reflect their responses to climate change and what do they mean in practice?

Chapter 4

Documentary analysis and participant
observation

Contents

4.1 Chapter overview	109
4.2 Documentary analysis: results.....	110
4.2.1 Declarations as Promotional Statements	110
4.2.2 Declarations as a Collective Voice	113
4.2.3 Declarations as a Commitment.....	115
4.2.4 Production of the declarations	117
4.3 Link to next phase of research.....	122
4.4 Participant observation: results	123
4.4.1 Comparison to the University of Exeter	123
4.4.2 Scale of the challenge.....	125
4.4.3 Focus on action	128
4.4.4 Structure of meeting enabled action-orientated discussion.....	130
4.5 Joint discussion	132
4.5.1 Reflecting a moment in time	132
4.5.2 Collaboration and influence	135
4.5.3 Engagement with key stakeholders.....	138
4.5.4 Action and transformation	141
4.6 Next research phase	147

4.1 Chapter overview

This chapter addresses Research Question 1 and its underlying objectives:

Research Question 1: How do universities' climate emergency declarations reflect their responses to climate change and what do they mean in practice?

Research Objective 1: Assess the role of universities' climate emergency declarations in their progress towards sustainability.

Research Objective 2: Identify subsequent processes following the climate emergency declarations within universities.

The chapter consists of the results for two pieces of research. Firstly, I cover the documentary analysis of UK universities' climate emergency declarations (section 4.2) and provide a brief link to the next phase of research (section 4.3). Secondly, I outline a case study of participant observations across a series of university sustainability meetings (sections 4.4). The chapter closes with a discussion bringing the two together (section 4.5) then outlines the next phase of research (section 4.6).

While other research about climate emergency declarations emerged throughout the course of my PhD and is incorporated into the literature review (Chapter 2), at the time the research in this chapter took place, this was minimal or non-existent given I was studying an emerging phenomenon.

My research into the climate emergency declarations has already been published as a peer-reviewed paper (Latter and Capstick, 2021). Content from the paper has been incorporated into this and other relevant chapters and expanded upon.

4.2 Documentary analysis: results

The analysis identified three overarching themes. These were based on step one of the Critical Discourse Analysis process suggested by Oswick (2013) - the text dimension (see Chapter 3, section 3.5.1). In the results below, I highlight how these declarations function as promotional statements, as a collective voice, and as a commitment. A total of 25 universities were included in the analysis; see Table 8 for a summary of the distribution of themes across the documents analysed.

Table 8. Distribution of themes across documents.

Theme	Number of documents
Declarations as promotional statements	22
Declarations as a collective voice	26
Declarations as a commitment	18

As explained in the previous section, there were 26 documents overall, one of which was the Climate Letter (that was simply signed by multiple universities) and the other 25 were standalone declarations that universities made individually. Aside from carbon neutral targets, the Climate Letter provides no information about the individual signatories. Prior to the list of signatories, it has a short introduction which was included in the analysis, but this is quite generic in that it does not relate to individual universities. Therefore, although the Climate Letter was included in the analysis, the results mainly draw from the standalone declarations.

4.2.1 Declarations as Promotional Statements

The declarations function, firstly, as promotional statements about the universities' achievements on climate change and broader related issues – in that they were used to cast universities in a positive light and highlight their own credentials. Many of the

Chapter 4: Documentary analysis and participant observation

universities highlighted work that they have previously done, that was ongoing or that would be taking place in future. There were a slightly higher number of examples of previous work compared to ongoing or future work. Examples of promotional statements identified within declarations include the following:

“The University is [...] opening a zero waste shop for staff, students and the local community early next year.”

- University of Winchester (2019)

“For many years, the University has been deeply committed to social, environmental and financial sustainability at a strategic and operational level.”

- Canterbury Christ Church University (2019)

“Between 2009 and 2018 we produced 9,209 publications relating to Sustainable Development Goal 13: Climate Action.”

- University of Manchester (2019)

As can be seen from the statements above, despite the declarations ostensibly being concerned with the climate emergency, there was a clear sense in which they sought to draw attention to the reputation and good name of declaring institutions rather than focusing on the issue itself.

The university's role in research and education was frequently mentioned and focused typically on the content of curricula and type of research carried out (for example, conservation), as opposed to research and educational practices (such as internationalism or long-haul travel), or public engagement and outreach. Staff and student practices, awareness and engagement were mentioned but to a lesser extent; the main focus across the declarations was on operations, research topics (rather than practices) and education. Although there is a clear focus on climate change, 14 of the universities referred specifically to animals and/or nature, with four declaring an ecological, biodiversity or

Chapter 4: Documentary analysis and participant observation

environment and climate emergency. This suggests that these universities sought to publicly acknowledge and give weight to these related issues.

A clear indicator of the promotional function of declarations was their use to show leadership in climate change and sustainability through awards and rankings, subject expertise and being the “best” or “first” at something. There were explicit mentions of leadership, both current and aspirational, for the university as a whole as well as researchers and students, as illustrated by the following statements:

“Lauren McDougall, President of the Students’ Representative Council (SRC), commented: ‘Students at the University of Glasgow feel passionately about the issue of climate change and want their institution to play a lead role in tackling it.’”

- University of Glasgow (2019)

“We have some of the best teams anywhere in the world working on climate change and the environment.”

- University of Exeter (2019a)

“This builds on the university’s long-standing commitment to sustainability which has [...] seen it receive a first-class award every year since 2012 from the People & Planet University Green League.”

- University of Brighton (2020)

This emphasis on leadership is designed to showcase universities’ proficiency and the recognition that they have received for their efforts. Such leadership was often framed in an international context, reflecting the priorities of the university sector to be successful globally, not only for research and education but also for sustainability issues.

The placing of the publication of declarations, as well as their content, also shows them to have a strong promotional aspect. The majority of declaration announcements were

Chapter 4: Documentary analysis and participant observation

published as public-facing news articles on universities' websites. This indicates the intended audience was not only staff and students, but also aimed at wider stakeholders and the general public. Many of the declarations were mentioned in local and national press, enabling a wider public reach and promotional function for universities (for example, Falmouth Packet, 2019; Walker, 2019).

4.2.2 Declarations as a Collective Voice

The declarations are used to demonstrate both internal and external togetherness: that the universities are part of a bigger whole and that there is attention to this topic across the sector. Many universities stated that they were joining with others in the UK and around the world in declaring a climate emergency. As with the expressions of leadership, there was an international focus by many universities. Framing the declarations in this way gives a collective voice to the universities, even though many of the declarations were made separately and there is a clear element of competition shown by their emphasis on leadership. As so many of the declarations were announced during a short period of time and others by way of the Climate Letter, this also gives them a collective voice. Examples of this feature are illustrated by the following statements:

“Aberystwyth University has joined organisations around the world in declaring a climate emergency.”

- Aberystwyth University (2019)

“We all need to work together to nurture a habitable planet for future generations.”

- Climate Letter; SDG Accord (n.d.)

“The University of Plymouth has declared a climate emergency, joining an international movement.”

- University of Plymouth (2019)

Chapter 4: Documentary analysis and participant observation

The universities appear keen to demonstrate that others have already declared a climate emergency, even the University of Bristol (2019), which was the first university in the UK to do so. By framing their announcements in this way, the universities give more legitimacy to their declarations through showing they are part of a wider initiative. Several universities also mentioned that they recognised the responsibility they have in taking climate action, with some stating how universities had a specific role in doing so, for example through research, teaching, innovation, how the institution is run and through leadership. However, some still referred to how it is not their responsibility alone, such as stating “all responsible organisations have a duty to act” (University of Brighton, 2020) and “all of us in the University community [need] to take our share of initiatives and responsibility” (University of Warwick, 2019).

Staff and students are mentioned in almost all the declarations and are positioned as key collaborators in relation to climate change and sustainability. There are also specific mentions of the Student Unions supporting the universities’ actions, working with them or jointly declaring a climate emergency.

“Bath Spa University and its Students’ Union have joined forces to declare a climate emergency.”

- Bath Spa University (2020)

“Professor Juliet Osborne, Director of the Environment and Sustainability Institute, will be chairing a working group bringing together staff and students.”

- University of Exeter (2019)

“A comprehensive action plan will be drawn up in consultation with staff and student unions.”

- Goldsmiths (2019)

Chapter 4: Documentary analysis and participant observation

Staff and students are often positioned as active and independent stakeholders as well - raising awareness, showing concern, pushing for action and providing ideas, though students are positioned in this way to a greater extent; for example, in the University of Sussex's (2019) declaration: "in declaring a climate emergency, our students and supporters will hold us to account for our own actions". External stakeholders are also mentioned, but to a lesser extent and depth than internal stakeholders. This suggests that although the declarations are public, they focus on demonstrating the importance of their internal stakeholders who are likely to be most attentive to the declarations.

4.2.3 Declarations as a Commitment

The declarations function as a way to demonstrate the universities' commitment to tackling climate change in tangible ways such as policies, targets and committees, as well as talking broadly about action and commitment. Many of the universities referred to the severity and urgency of climate change, with their commitments used as a way of demonstrating that they understand this, as in the phrasing used by Liverpool John Moores University (2020): "We are deeply committed to playing our part at this critical time".

While much of the wording of the declarations is promotional, as described above, many nevertheless include action-oriented statements. Six universities explicitly addressed the need to go beyond words and take action (Cardiff University, 2019; Falmouth University, 2019; Goldsmiths, 2019; University of Exeter, 2019; University of Sussex, 2019; University of Warwick, 2019), for example:

"We must [...] work together to help move us on from making this declaration to a comprehensive plan of action."

- Cardiff University (2019)

Commitment was also demonstrated through more tangible outcomes or objectives. Most universities mentioned specific targets or goals, mainly for becoming carbon neutral or

Chapter 4: Documentary analysis and participant observation

reaching net zero; this is also referred to in the Climate Letter, signed by 20 of the universities. For example, Keele University (2019) “announced an ambitious climate emergency target to be carbon neutral by 2030”. In some cases, universities also stated their intentions to incorporate sustainability more deeply into the university’s practises and some referred to sustainability being at the “heart” of the university (University of Manchester, 2019; University of Plymouth, 2019; University of Winchester, 2019). The notion of more transformative change to the universities’ modes of operation and ethos was only occasionally touched upon, however, as in the following example:

“Through this declaration, Birmingham City University commits to putting in place a programme that will deliver a transformed university.”

- Birmingham City University (2019)

Both current and future internal committees, groups and boards were mentioned, though to a lesser extent than targets and documents. This included five universities which specifically mentioned working groups or plans to bring people together to further address sustainability or carbon emissions targets. In many cases, Vice Chancellors’ statements are used to convey the commitment at senior level to the declaration. All these tangible outcomes and practises demonstrate ways in which the universities’ actions are made legitimate and can be scrutinised in future.

Despite the use of action-oriented statements, there are only two documents with calls to action: Bath Spa University (2020) and the University of Bristol (2019). The call to action from Bath Spa University (2020) asks those within the university and those who live locally to make a pledge. In the declaration it is not clear what this pledge involves. It mentions twice to make your ‘own pledge’, which suggests that those making a pledge are writing what they intend to do to tackle climate change. The link to make a pledge leads to further information which includes a pre-written statement for people to then agree to by providing their name, relationship with the university and their email address. The call to action within the University of Bristol (2019) declaration encourages staff and students to change their

Chapter 4: Documentary analysis and participant observation

behaviours via two schemes. Although it mentions the names of the schemes, it does not explain them and does not provide further information or links to how they can change these behaviours. It would therefore be up to staff and students to take the initiative and search for these schemes themselves if they want to act.

Given that only two out of 25 universities included calls to action, it shows that the declarations are not being used as a tool through which to directly ask something of others. Where 'action' has been mentioned it is not as a call to action but a broad acknowledgement that action needs to be taken, that the university is already acting or intends to act in future.

4.2.4 Production of the declarations

This section details findings from step two of the analysis, the discursive practise dimension, which explores how the documents are produced and consumed to provide wider context beyond the text itself.

Some of the climate declaration announcements by universities indicate how the declaration came about, which could provide insight into the inner workings of the universities. In one of the universities, the declaration came from a student petition and a letter to the Vice-Chancellor from academics (University of Bristol, 2019), in others it was pressure from senior management and the University Council (Keele University, 2019). Most did not provide information about the process behind the declaration, which does limit the ability to develop a deeper understanding of the (internal) lead up to them. However, the wider public context in which they occurred is known.

Authorship

Ten universities did not list an author or contact in their declarations. Nine listed communications or media staff or team as either the author or contact. Two had a named author but with no job title, which suggests that it is likely they are from the university's

Chapter 4: Documentary analysis and participant observation

communications/media/website team. Only two declarations specified authors who were senior university staff: one was authored by the President and VC while the other was authored by the Board of Governors. As most of the declarations were listed as news articles, it is not surprising that many do not have individual authors or that the author or contact is the university's communications or media team. This suggests that the news articles are broadly seen as a way to communicate information from the university as an organisation rather than an announcement from an individual person.

Differences between universities

As part of the authorship analysis, I explored whether there were any differences between the universities. I looked at the type of university and their current performance on sustainability issues in comparison to when/how they declared, differences in their emissions targets and other elements of the declarations. These elements included the length of the declarations, the subjects they covered and the different types of quotes used from people within the university. I chose to compare Russell Group (n.d.) universities—a collective of 24 “world-class, research-intensive” UK universities—with those that are not part of this group. While this first research study addresses Research Question 1 (How do universities’ climate emergency declarations reflect their responses to climate change and what do they mean in practice?), I was mindful that Research Question 2 focuses on researchers. Therefore, given that Russell Group universities have a key focus on research, I wanted to identify whether there may be differences in the declarations that would be worth exploring in the second part of my research.

Most of the standalone declarations from the Russell Group universities include quotes and all mention research (some to a greater extent than others), and the length of the declarations varies slightly between all universities. Yet all the standalone declarations include these variations - these features are not exclusive to the Russell Group universities. There were also no clear groupings in terms of when these universities declared or in what format (standalone declaration versus Climate Letter). However, there was a difference in the amount of Russell Group compared to non-Russell Group universities that declared.

Chapter 4: Documentary analysis and participant observation

Just under half (46%) of Russell Group universities declared a climate emergency. These were Cardiff University, University of Glasgow, University of Bristol, University of Exeter, University of Manchester, University of Nottingham, University of Warwick and Newcastle University, and three which only declared via the Climate Letter: King's College London, University of Cambridge and UCL. This compares to 19% of non-Russell Group universities that declared. While further analysis would be required to understand the significance of this, it is an interesting observation that a greater percentage of Russell Group universities made a declaration than those that are not part of this group. It is possible that there could be something specific about these universities which meant that declaring a climate emergency was more appealing or relevant to them.

I also wanted to look at the People & Planet (2019) University League data to see whether variations in universities' current sustainability progress were reflected in elements of their declarations. The League scores universities against multiple criteria which add up to 100, with the total score giving universities either a 1st class result, 2:1, 2:2 or 3rd class, reflecting how university students would be graded. There appeared to be no link to universities' performance in the League and when they made their declarations. For example, the first to declare was the University of Bristol which received 1st Class in the League, but the third to declare was the University of Glasgow which got a much lower score of 2:2. Universities that did well in the League were not necessarily those which made standalone declarations either; King's College London, Swansea University and Glasgow Caledonian University all received a 1st Class score but only signed the Climate Letter. Also, having a good standing in the University League does not appear to have any relation to when the universities stated that they will be net zero or carbon neutral by. The seven 1st Class universities have targets that vary from 2030 to 2050, and one did not mention an emissions reduction target (see Table 9).

Table 9. Universities that received 1st Class in the People & Planet University League 2019.

University	Net zero or carbon neutral target date
------------	--

Chapter 4: Documentary analysis and participant observation

Bangor University	Emissions reduction target not mentioned
Canterbury Christ Church University	2030 or 2050 (not specified)
Keele University	2030
Newcastle University	2040
University of Brighton	As soon as possible after 2025
University of Bristol	2030
University of East Anglia	2050

Positioning of stakeholders

The mention of different stakeholders came up often during the analysis. Almost all declarations included quotes from staff at the highest levels of the universities, such as Vice-Chancellors or Deputy Vice-Chancellors. There are 22 quotes from Vice-Chancellors, Deputy Vice-Chancellors, Presidents or Chief Operating Officers. This is to be expected as agreement for a university-wide declaration will need to have been agreed at the highest level and is also specifically stated in the Global Universities and Colleges Climate Letter. The universities that both signed the Climate Letter and have standalone declarations include quotes from staff at this high level or even higher in the case of the University of the West of England - the Board of Governors.

The analysis showed that internal stakeholders are seen as particularly important given the high mentions of students and staff. Students and staff are often spoken about alongside 'community', as well as 'partners' and 'visitors' to a much lesser extent. Additionally, there are specific mentions of the universities' Student Unions, sometimes with quotes from a Student Union representative. There are mentions of Student Unions supporting the universities' actions, working with them or jointly declaring a climate emergency. This, along with the positioning of students more generally in these declarations indicates that most of the universities want to highlight that students are an integral part of tackling climate change. Students are mentioned in the following varying ways: together with staff (and/or sometimes other stakeholders); part of working together; students providing something -

Chapter 4: Documentary analysis and participant observation

raising awareness/showing concern/providing ideas about environment/pushing for action; Student Union; curriculum changes; the university providing climate change knowledge/help/support to students; asking students to take action; quotes from Student Union or students; NUS; action on student halls; future students.

Whereas students are mostly mentioned generally or in reference to Student Unions, there is a much higher prevalence of individually named staff. There are some mentions of academics in the declarations, often senior academics from relevant subject areas who provide quotes about climate change expertise within the university or facts about climate change, which links back to the emphasis on leadership identified in the themes above. They are therefore positioned as important stakeholders with insights into the subject area. The varying ways in which staff are mentioned are as follows: together with students (and/or sometimes other stakeholders); staff providing something - ideas/awareness/pushing for action about climate change; part of working together; the university providing climate change knowledge/help to staff; asking staff to act; photos of staff in the declaration.

Placing and timing of declaration, intended audience and genre

The timing of the declaration announcements also points towards their promotional function. Following the University of Bristol's initial declaration, a concentrated series of declarations were made, particularly in the first six months. Some universities made their declarations on specific days where more publicity was likely: four declared on September 20, 2019, the start of a week of international climate change strikes, and one declared on World Environment Day 2019. These declarations were made at a time when climate change and the climate emergency were very much in the public eye, suggesting an ideal time for universities to demonstrate their achievements in this area.

The universities are likely to have more detailed information about climate change and sustainability elsewhere on their websites. Therefore, a lack information in the declarations

Chapter 4: Documentary analysis and participant observation

does not mean that it does not exist elsewhere – either public-facing or internally. The declarations highlight information that the universities see to be most relevant and important to their announcement.

Two of the standalone declarations were uploaded as PDF files on the universities' websites, both accessed via their main sustainability web page. This was due to the content being different from the news articles. One is the climate emergency declaration as a formal declaration (rather than it simply being declared as part of a wider news article) and another was a formal document from the university Board of Governors declaring a climate emergency. This indicates that the intended audience is smaller than those universities who published their declarations as news articles, as people would have to actively look on these sustainability pages to find the information. The declarations are still easily accessible and are on a relevant area of the website but are likely to reach a much smaller audience.

4.3 Link to next phase of research

The documentary analysis of universities' climate emergency declarations found that they function in three key ways: as promotional statements, as a collective voice, and as a commitment. This shows one of the ways in which universities are responding to climate change at a specific moment in time and how they are positioning themselves and their role in addressing the climate emergency. However, these cannot show the internal processes happening in universities in response to the declarations. The next phase of the research, participant observation, aims to address this gap.

4.4 Participant observation: results

The results below are from the participant observation of the single case study university. Following their university's climate emergency declaration, an internal group was convened with the aim of producing a climate emergency action plan to provide to the university's executive team. The group was led by a senior academic along with professional services staff and academics from across the university, with members being involved in university sustainability in some form or being personally concerned about the climate crisis. Four key themes emerged from the analysis across all the meetings: 1) comparison to the University of Exeter, 2) the scale of the challenge, 3) a focus on action and 4) how the structure of meeting enabled action-orientated discussion. Each will be discussed in turn.

4.4.1 Comparison to the University of Exeter

An Environment and Climate Emergency Working Group White Paper (Osborne *et al.*, 2019) was published by the University of Exeter six months after their climate emergency declaration in 2019 and encompasses a series of recommendations to the Vice Chancellor's Executive Group – as requested by the Vice Chancellor themselves. At 54 pages long, it includes contextual information about why they are changing their approach and taking action, their current carbon emissions and their proposed next steps which includes details about data reporting, their institutional response, infrastructure, and activities such as travel, procurement, and behaviour and culture change. This document framed the entire series of meetings as it was presented during the first meeting I attended and was seen as setting the standard to work towards, with the group explicitly stating that “we should be aiming to produce something pretty similar” and that “this template is a pretty good one to follow” (meeting 1). It was also described as ambitious and “searingly honest” (meeting 1) – which was perceived as slightly surprising, but good, in terms of Exeter's progress and what needed to be done.

The majority of the first meeting was dedicated to looking in detail at the White Paper, with people looking carefully at the wording and reading sections out loud. People made

Chapter 4: Documentary analysis and participant observation

comparisons, good and bad, about their own university's progress in relation to Exeter's, for example, internationalisation and having old building stock were seen as challenging areas whereas divestment was seen as an area they felt more confident about as they are "well down that road" (meeting 1). There were also general reflections regarding how Exeter had approached different topics and whether the group should follow suit, such as giving everyone an individual carbon budget. There was also a recognition that the "cultural change element of it is key" (meeting 1) in the White Paper, in terms of the climate action that needed to be taken.

The White Paper was again central in the second meeting but with a new focus on action and getting practical support for their work. Using the White Paper as a template meant that the group had some key starting points where they knew they needed to collect data to start informing their own action plan. One person had been tasked with finding out the level of resource that had gone into the White Paper and contacting the University of Exeter directly, which suggests that the group wanted to know if they were likely to require additional support and how long it might take. To a certain extent however, the amount of effort it took the University of Exeter to create the White Paper appeared to be evident in the document itself, for example, in the section about procurement one person spoke about it being "incredibly detailed. They seem to have worked really hard on it" (meeting 2). While the White Paper was discussed in the most detail during the first two meetings, it was referred to over the following seven meetings, demonstrating that it was being used as a constant reference point for how the group wanted to present their own work.

Three universities were mentioned in relation to emissions data and sustainable procurement, and another university was mentioned in the context of an EAUC meeting about universities' climate emergency declarations. However, these mentions were very brief – the only university spoken about in detail was the University of Exeter. While it is likely that emissions data and climate change plans may have been available from other universities, either publicly or through the group's networks, Exeter appears to have been the focus because their White Paper is a direct and thorough response to their climate

Chapter 4: Documentary analysis and participant observation

emergency declaration which is contained in one document, and therefore more suitable as a reference point.

4.4.2 Scale of the challenge

Throughout the meetings, there was a strong sense of the large scale of the challenge – both in terms of the work that the group was undertaking and the work that subsequently needed to be done by the university to address its climate impact. This can be seen partly in the breadth of topics that were discussed across the meetings.

References to scopes 1, 2 and 3 were the most common topic discussed in the meetings, closely followed by travel; both were mentioned in nine meetings. It is unsurprising that scopes 1, 2 and 3 were frequently discussed, as they are the mechanism through which many organisations report their emissions. Many other topics were mentioned, though less frequently, including financial implications, energy, buildings, internationalisation, procurement, waste and behaviour change, reflecting the breadth of the document the group was creating. Discussion about research culture and practices or research content was minimal. When research was mentioned, it was minor comments about research being a key purpose of the university, student research in the context of Covid-19 and a research consortium between a group of universities that may be able to help with their climate action plan. However, there were two instances where research was discussed in slightly greater detail. In meeting 6, there was a discussion about the university's research strategy and how the group can embed their own work in this, though this related to key people they needed to connect with to make this happen rather than the content of what would be included. In the following meeting, there was a brief mention that a separate submission they were preparing for a submission for the SDG Accord required information about research, for which group members were asked to contribute.

This feeling of the large scale of the challenge spanned multiple aspects of the group's activities and shifted over the timescale of the meetings. Early on, this was seen through

Chapter 4: Documentary analysis and participant observation

how the University of Exeter's White Paper set a high standard to work towards. Although the group appeared to understand the seriousness of the climate crisis, they were pragmatic and reflected on the feasibility of what they were doing throughout the meetings.

"I think this is really serious [...] we're going to need to couch the White Paper that we produce in the context of what's achievable."

(Meeting 1)

"We can only go back to where we've got accurate data [for Scope 3 emissions]."

(Meeting 3)

This then led into discussions around the availability of data and how the group could acquire the information needed to move forward successfully with their work – a topic that was mentioned across ten of the meetings. There was a recognition that some data was missing (such as some information about long distance travel which is not submitted to the university), lacking detail (such as catering) or that the data gathering processes themselves needed to be improved. It was emphasised that everyone's help was needed to collect data: "We are now at the stage where we really, really, really need data" (meeting 5) and that "hard data is always difficult for the university to ignore" (meeting 10). This points to the possibility of the data having a dual purpose – partly for ensuring data is available to make evidence-based decisions, but also using the data to push for action. This clear need for data suggests that it had not previously been easily accessible, consolidated or even collected in some cases. This was highlighted by one person in meeting 9, who asked for data collection on emissions to happen every year and for this to be made clear in the document the group was putting together for the university executive team. The need for data also contributed to the focus on action (see following section) as the group would have been unable to progress with their work without this data.

Upon seeing that the University of Exeter's Scope 3 emissions were 84% (Osborne *et al.*, 2019), one person reflected that their own university needs to "lower our emissions in this

Chapter 4: Documentary analysis and participant observation

area really very seriously”. Scope 3 emissions remained a key discussion point throughout the meetings, initially in terms of finding accurate data (“this is going to be our biggest challenge”; meeting 5) then the subsequent confirmation that “scope 3 dominates our carbon budget as expected” (meeting 7). Within this, procurement and student travel made up most of the university’s scope 3 emissions, with other areas such as staff travel accounting for a smaller amount. The most frequent flyers were a topic of discussion across several meetings, though it was felt that the group would “need to tread really, really carefully” (meeting 4) so that the frequent flyers do not get too defensive. Given the challenge of data collection and that it makes up such a large proportion of the university’s emissions, it is unsurprising that scope 3 emissions were so frequently mentioned and contributed to the scale of the challenge that the group faced.

The scale of the challenge was also felt throughout the meetings in relation to the tight deadline for the work as there were several stages to data collection and producing a final document. The group was reminded of this regularly (“it’s incredibly tight timescales now”; meeting 11) and was kept up to date with specific deadlines. While the scale of the challenge refers to the work that the group was undertaking, it was also a theme that underpinned the meetings with regards to the action that would need to be taken following on from the group’s work – i.e., actual emissions reductions.

In later meetings, the scale of the challenge was instead mostly seen in terms of how best to present information to the university executive team, though the importance of this was also noted at the first meeting.

“None of this will really get embedded until we come up with a comprehensive strategy of what we’re going to do.”

(Meeting 1)

“We need to sign [the university’s executive team] up to the notion of radical change of emissions.”

Chapter 4: Documentary analysis and participant observation

(Meeting 10)

Attendees spoke about “getting the climate emergency embedded in the university’s documents, procedures all the way through” and “trying to influence at every level that we can” (meeting 8). The group appeared to be thinking very carefully about the implications of what they say in the document as big decisions could be made from it. For example, they spoke about making sure there were not areas of ambiguity in the document, making it clearer and shorter, and including a summary of recommendations.

In the final meeting which took place after the document had been submitted to the university executive team, it was clear that the group would face some further challenges. They laid out the work that the group could do over the next couple of years and got approval for the actions in the document, though “it’s maybe not quite as ambitious as we wanted it to be” (meeting 11). They also noted that one person in the university executive team challenged some of their recommendations. In response to this, some of the group were meeting with this person further to understand their concerns – “I don’t think we should be too obsessed with this because I think it was an initial knee jerk reaction” and “it’s all coming from fear of the unknown, I think” (meeting 11). This suggests that the group understand the importance of building relationships with key stakeholders within the university to progress their work. Despite the group having to cut down the size of their document for the executive team, a slightly lower level of ambition and some pushback, they still felt positively about being able to take the work forward.

4.4.3 Focus on action

Rather than the large scale of the challenge being a barrier for the group, it was instead met with a pragmatic ‘can do’ attitude where action was seen as a high priority throughout the meetings. This was the most common theme that occurred from the template analysis. The theme refers to immediate actions in relation to the objective of the meetings (to create a climate emergency action plan) rather than immediate actions to reduce emissions.

Chapter 4: Documentary analysis and participant observation

Actions were given, reiterated and some even acted upon during the meetings, making it clear that it was important to make progress - and quickly. Sometimes actions were allocated to other people, and other times people offered to take on work (“I’ll put an action on me”; meeting 3). While this is a regular occurrence in meetings and not specific to this group, it indicates that people actively wanted to progress their work and were willing to take on tasks. There was a clear sense that everyone should know what their tasks are and when they should be completed by. These actions appeared to be successful, as they were followed up at subsequent meetings and there was a clear progression throughout the series of meetings where data was collected successfully, knowledge was expanded and outputs were created.

Where there were challenges in progressing their work, the group appeared to be highly effective at getting additional support for their work. In the second meeting, people shared information about contacts who could help with various issues. This continued throughout the meetings, and there were sub-groups and separate meetings that took place outside of this main series of meetings (which I did not attend). Some of these meetings were with other people in the university, whereas others were with regional or national contacts. The group recruited additional people to support with data collection and analysis for scopes 1, 2 and 3, an essential part of the group’s work at this stage. Given that there was little time between each of the main meetings, the additional meetings suggest a desire to work quickly and move things forward. Also, this shows that the group was keen to be collaborative and people were willing to ask others for help to get things done. Even where actions were not being directly taken by the group for certain areas, these connections allowed them to have a better oversight of what else was happening in the university. For example, one person mentioned that “we recognised way back in February that there isn’t officially an entry on the risk register for the climate emergency” (meeting 8) but that it was being developed by someone outside of the group. The level of awareness of some areas of climate action also appeared to differ between the group and the university executive team, with some scepticism from the group about the university executive team saying that

Chapter 4: Documentary analysis and participant observation

sustainability is being embedded in education - “I just laugh because it’s not happening” (meeting 6).

Regarding the final output from the meetings, this consisted of a mix of information provision and actions. It was clear that this would be the case, as during the meetings there was a focus on data collection and being able to present this in a clear manner to the university executive team. The final output included a breakdown of the university’s current emissions, the different areas this covers and how this was calculated. Looking forward, it also included future scenarios and recommendations/next steps for how to reduce the university’s emissions and the impact that different choices would have – mainly financial but also behavioural and practical.

Even in the first meeting, there was a sense of needing to focus on action. In discussing in University of Exeter’s White Paper, there were questions about whether the actions included in Exeter’s document had actually been addressed by the university. This suggests that the group did not view their future document as an end point, but that its contents need to be actionable. This thread carried through to the final meeting where one person commented “thanks everybody for all of your input, but this is just the start, isn’t it?” and is also clearly reflected in the output from the group, as it included details about next steps for the work that the university should take. This covered practical areas of emissions reductions but also the less tangible factor of cultural change and some structural and governance elements such as how to report continuing work.

4.4.4 Structure of meeting enabled action-orientated discussion

The successful focus on actions in the meetings was made possible through the way they were structured and facilitated. At the start of the first meeting, one person noted that there would be no introductions as everyone knew each other. The group was also united in that most people appeared to have the same ambition for their work – to make real change

Chapter 4: Documentary analysis and participant observation

happen. While it is not clear whether the familiarity in the group was simply through the two meetings prior to me joining or whether people knew each other before that, there was a friendly and open atmosphere in all the meetings. This helped discussions to flow more easily and it also meant that the speed at which actions could be taken was more streamlined, as people knew who to talk to about certain topic areas.

However, the meetings still felt quite formal and there was one person who was a clear leader of the group. There was almost always a clear agenda, participants appeared to know what they were presenting or being asked for, and only one meeting went over time. The group often talked through notes and actions from previous meetings and there was an expectation that people had made progress since they last met. People were regularly asked for feedback, input, and thanked for their work by those leading the discussions and the wider group, for example, there was a lot of praise for the collation of the scope 1, 2 and 3 data. This helped to ensure that the group felt motivated and that the work they were doing was valued (at least by others in the group).

During meeting 10 (the penultimate meeting), edits to the document were made as they went along, going through paragraph by paragraph and checking that the group was happy. Everyone in the meeting made contributions, and it felt very collaborative despite the clear time pressures and volume of work. This was the only meeting that ran over time (by 30 minutes), demonstrating the importance of completing this task as the group was at a critical stage. There was only one meeting (11) which did not feel as structured, urgent and formal as the previous ones – perhaps due to there having been a larger gap between this and the previous meeting, as well as much of the (current) work of the group having been achieved. While some of these characteristics of the meetings are common occurrences and not specific to this group, such as who led the group and having a clear agenda, they are worth stating to understand the broader atmosphere and structure of the meetings.

4.5 Joint discussion

The documentary analysis of climate emergency declarations from multiple universities (section 4.2) and the participant observation using a single case study university (section 4.4) have explored Research Question 1: How do universities' climate emergency declarations reflect their response to climate change and what do they mean in practice? Here, the results of both sections will be discussed together.

Although the declarations tell us about the image that the universities are trying to portray and the actions they say they are taking, it cannot show the internal workings of the universities either in the lead up to making the declarations nor what action they have taken after doing so. In this sense the analysis carried out on the declarations should be seen primarily as a snapshot of universities' public-facing intentions and perspectives at a critical juncture in society's response to the climate emergency in the UK. The meeting observations aimed to partially address this gap, providing insights into how one university approached the aftermath of and follow-up to their declaration. Exploring both the external and internal aspects of UK universities' climate emergency declarations allows for a comparison between the two to understand where any similarities and differences lie, but also any connections between them. The analysis of the climate emergency declarations and subsequent action sits alongside a small amount of similar literature published since 2019. Much of this literature recognises that the topic is under researched due to how recent the declarations and emergency framing are, though research on the topic has become more widespread throughout the duration of my PhD.

4.5.1 Reflecting a moment in time

The declarations clearly reflect a specific moment in time when the notion of a climate emergency came to the fore in the UK. Since late 2018 there has been a particularly sustained and high level of publicity around climate change in the UK, including media coverage (BBC, 2019; IPCC, 2018), school strikes and large-scale protests. The heightened visibility of climate change was unprecedented and unexpected. As well as contributing to, and reflecting, a substantial increase in public concern (Capstick *et al.*,

Chapter 4: Documentary analysis and participant observation

2019), it paved the way for increased pressure on and by civil society, including universities. This wider social context in the UK is also noted by Gudde *et al.* (2021) in relation to UK local authority declarations, which occurred at a similar time, and who also observe that the lack of declarations after March 2020 may be due to Covid-19 – likely to be similar for universities. Although it is difficult to know the exact mechanisms driving each university's declaration, it is clear this wider social context of civil society pressure, as well as the growing interest in climate emergency declarations, was influential in setting the context and pressure for universities to act.

The concentration of declarations in a certain period is also reflected globally (Centre for Climate Safety, cedamia and Vote Climate Australia, 2023). While there does appear to be some level of practical purpose to the UK university declarations, for example where action-oriented statements are used, they can also be viewed as symbolic, particularly given the timing of when they occurred. Analysis at a global level found that declarations by local governments can be seen as symbolic but they do not necessarily impact the level of climate action (Ruiz-Campillo, Castán Broto and Westman, 2021). This is also reflected at a country level, where declarations from local governments in Australia were seen to be symbolic at the time of writing but that symbolism itself is not necessarily bad and they may yet lead to change (Chou, 2021). Similarly, declarations by some Swedish cities were seen to be mostly symbolic with regards to political impact, but did prompt reflections on cities' actions (Henman, Shabb and McCormick, 2023). This suggests that the declarations, from universities or otherwise, can have multiple purposes but are not always a prompt for further actions.

The timing of the declarations also points towards their promotional function. Following the University of Bristol's initial declaration, a concentrated series of declarations were made, particularly in the first 6 months. Some universities made their declarations on specific days where more publicity was likely: four declared on September 20, 2019, the start of a week of international climate change strikes, and one declared on World Environment Day 2019. These declarations were made at a time when climate change and the climate emergency were very much in the public eye, suggesting an ideal time for universities to demonstrate their achievements in this area. This promotional aspect

Chapter 4: Documentary analysis and participant observation

of the public-facing declarations was not as prominent in the case study meetings, given the audience and purpose was different.

However, in the meetings there were discussions about the university being part of the Times Higher Education Impact Rankings, therefore while promotion of the university's climate actions was one important discussion point of many, the meetings themselves were not promotional. The groups' actions were discussed in the context of other universities to a certain extent, but a broader sense of how their actions sit within the wider sector was not particularly discussed, though this may have occurred in the initial meetings prior to my data collection.

It is also likely that the declarations will have been announced at different stages of universities' progress towards addressing their climate impact. The case study provided an insight into one university – perhaps typical in that they appeared to have already made some progress in addressing climate change but still had a considerable way to go. The promotional focus and timing of the declarations raise the question of whether universities used the climate emergency as an opportunity to make themselves look good (or at least, not look bad) with regards to sustainability, or whether they used it to raise their level of ambition and take further action. While it is difficult to say for certain without analysing how each university's actions compared to their declarations, the results indicate that it is likely to be a mix of the two, with universities sitting on a spectrum with regards to why they declared and how this links to their current climate action or ambitions. However, Hoolohan *et al.* (2021) found that greater climate action on food and travel is needed from UK universities to be commensurate with their climate emergency declarations.

There are also some parallels with equality, diversity and inclusion (EDI) initiatives and statements in universities. Statements were quickly produced by US universities after the murder of George Floyd and Black Lives Matter protests, which “capture a moment in time” and changed the tone of institutions from being neutral around race and racism to more explicitly addressing them (Casellas Connors and McCoy, 2022, p.607)

However, a comparison of university statements and staff experiences on diversity and

Chapter 4: Documentary analysis and participant observation

inclusion in the UK found that while the statements aligned with how the institutions represented the issues, there was a disconnect between the statements and staff experiences in some areas (Richards *et al.*, 2023). This demonstrates how the creation of race equality documents in universities are not necessarily indicative of work being undertaken or organisational culture being changed (Ahmed, 2007). Even where universities were sincere in their declarations of a climate emergency, it is clear this was still part of a wider trend and response to a particular moment in time given the sudden rush of declarations which ended up fading away only a year or so later.

4.5.2 Collaboration and influence

The university declarations sit within a wider social context including alongside other declarations, for example from local governments. Yet they are also connected with and influenced by other universities as they can inspire each other or be seen as something to emulate or borrow from. This can be seen on a broad scale in the UK when the University of Bristol made their climate emergency declaration, and other universities followed suit. On a smaller scale, this is reflected in the meeting observations where the University of Exeter's climate emergency declaration and subsequent White Paper had a strong influence on the case study university. With other universities across the UK having declared climate emergencies at a similar time, it is unsurprising that they would look to each other for advice on how to move forwards. There are similar findings from Australia, where the first local government in the world to declare a climate emergency created a detailed climate action plan which has "become the standard bearer" (Chou, 2021, p.619) in a similar way to how the University of Exeter's White Paper was used by the case study university. As the University of Exeter's White Paper is extensive at 54 pages long (Osborne *et al.*, 2019), it has enough detail for other universities to use it as a template or at least a starting point to reflect on their own work. In contrast, the climate emergency declarations tended to be used for short news announcements with less detail (or even via the Climate Letter with minimal detail), therefore it is likely that the notion of declaring rather than the content itself is what influenced other universities.

Chapter 4: Documentary analysis and participant observation

The difference between how the universities declared may indicate a variability in their interest in publicity. While the Climate Letter contains clear commitments and recognition of the climate emergency and was signed by many declaring universities, for those universities that only signed this pre-written letter, it arguably indicates less ambition and expectation of scrutiny than a standalone announcement. While there are also clear differences in audiences between the declarations (external) and meetings themselves (internal), there are nevertheless likely to be some similarities in how the output from the meetings was created compared to the declarations. The document that the working group were crafting for their university's executive team in the case study involved great consideration over how it was worded and what was included to ensure it was accurate and impactful. It is likely that the declarations were created with similar scrutiny (though to a much lesser extent) given the potential implications of doing so and likelihood of needing to be signed off by senior university staff.

The analysis found some revealing contrasts in how universities position themselves in the declarations. There is a competitiveness in how the declarations are used as promotional statements, yet there is also a clear interest in showing that individual universities are part of a greater whole. From their emphasis on a collective voice, the declarations suggest that universities are seeking to emphasise that the climate emergency is a shared problem, and collaboration was also a strong feature of the case study meetings. This reflects climate emergency declarations and subsequent meetings by local governments. Collaboration with local communities and organisations was a key part of declarations from UK local authorities (Gudde *et al.*, 2021; Harvey-Scholes, 2019; Harvey-Scholes *et al.*, 2023), but also internationally. In Australia, local government declarations were often made in collaboration with others (Chou, 2021) and being part of a wider network was a core part of the declarations in Italy (Salvia *et al.*, 2023). This shows that how UK universities have positioned themselves and work with other institutions is not unusual in the context of the climate emergency declarations. While on the one hand the focus on a collective voice and collaboration is positive, on the other hand it may offer a way of diffusing responsibility for taking action though this seems unlikely given the promotional focus of the declarations.

Chapter 4: Documentary analysis and participant observation

Given universities' use of rankings and other ways to compare themselves to other institutions in the sector, they clearly operate with an awareness of their competitors, including those that are seen to be leading or worth aspiring to with regards to climate action. The flurry of declarations and resulting actions, as seen through the case study university, shows that universities declaring had an effect greater than the sum of its parts, with one university's ambitions influencing the operations of another and contributing to wider change. The working group in the case study university was clearly impressed by what the University of Exeter had done and used their White Paper as a constant reference point. The final output that the group produced did, to a certain extent, follow this template. Again, this seems to show that universities declaring and acting at similar times had a mutually reinforcing effect and setting the standard to aspire to. The competition element of the declarations was also found in analysis of UK council declarations, both internally within councils but also recognised by some citizens as a useful sentiment to potentially push councils to declare (Harvey-Scholes *et al.*, 2023).

While rankings (as well as awards, expertise and being the best or first at something) were a key part of how universities used the declarations in a promotional manner, university rankings should not be seen as solely negative. In fact, it is suggested that universities taking part in 'green' rankings, as opposed to traditional ones, is one way to overcome barriers to climate action (McCowan, Leal Filho and Brandli, 2021). The purpose of sustainability rankings is not only to differentiate between universities regarding how they are addressing related issues but also to improve their image and encourage other universities to take part (Calderon, 2023). Therefore, if the use of rankings by universities helps to drive change from other institutions, then this can certainly be positive, a viewpoint also supported by Calderon (2023) who argues that rankings can encourage commitments from universities. This dual collective and competitive aspect of universities is a positive force for climate action (Mocatta and White, 2023) and this appears to be the case for the climate emergency declarations as well, given the influence that universities can have on each other.

Chapter 4: Documentary analysis and participant observation

The collective and competitive aspects of the climate emergency declarations and subsequent action raises the question of how power is demonstrated in different ways. Reinforcive power (which relates to reinforcing and recreating existing structures; Avelino, 2017) is shown through the data and facts used throughout many of the declarations to showcase universities' existing work, intended to demonstrate that universities are knowledgeable and active on the topic. Existing data and facts are also used in the meetings to both make evidence-based decisions and legitimatise action. Innovative power, the extent to which actors can create new and visible resources (ibid), can also be seen in the declarations. As public documents, the declarations have the power to shape how universities want to be seen, particularly by those in influential positions given the declarations would have been approved at a senior level, but the content of the declarations may also have the power to shape what action can be taken afterwards. Although some declarations mention the need for external support, they also suggest that universities have power to make many decisions on climate change action themselves. There is collective power shown in the declarations both internally (working with staff and students) and externally (between universities and governments). There may also be pressure exerted towards the university both externally, given the wider social context and mentions of young people's concerns about climate change, but also internally as some declarations acknowledge concerns from staff and students.

4.5.3 Engagement with key stakeholders

When the case study working group presented their work to the university's executive team, they had to make some changes and faced some pushback, although were ultimately able to take much of their work forward. Although it is difficult to say for certain due to not being in the meeting with the executive team, there is perhaps a dual role that the executive team or other senior levels in the university play. The decision to declare a climate emergency will have needed to be approved by senior staff within the university regardless of where the idea was initiated, and this group was specifically tasked with looking at the climate emergency. This shows that senior people within the university want to show that the university both recognises the seriousness of the

Chapter 4: Documentary analysis and participant observation

climate emergency and wants to take action to address it. However, it is also at a senior level in the university, i.e. the executive team, where the working group come across barriers to taking the very action that they were tasked to undertake. This suggests that despite the university's own actions in declaring an emergency and bringing together of a group of committed and ambitious people to do something about it, there is a diluting down of the next steps. Despite this, the declaration itself had an enabling effect in that it allowed a group of concerned and determined people to bring together evidence for climate action within the university via a mechanism where they had a voice and leverage.

Both the declarations and the meeting observations showed that senior leadership at universities shapes climate action. The use of statements from senior university staff in the declarations, such as Vice Chancellors, is reflected in the meeting observations in terms of the group's work potentially having considerable consequences across the university and therefore needing to receive approval from the university executive team. This reflects other research into the UK HE sector. For example, the views of leadership and stakeholders within universities is seen as a key motivation for why climate change is incorporated into strategy and planning (Owen-Smith, 2023), and senior management leadership is a key factor for universities successfully being able to take climate action (Mazhar, Bull and Lemon, 2017).

While the meeting observations in the present research had a different focus and context, they are interesting to compare to those from Stein and Hare (2023), who reflected on their involvement in a sub-group of the Climate Emergency Task Force at the University of British Columbia in Canada which focused on engagement with indigenous peoples. They framed their work through considerations about foregrounding indigenous knowledges, addressing colonisation to ensure colonial dynamics are not reproduced, engaging in meaningful long-term relationships with indigenous peoples and focusing on both immediate and long-term actions (Stein and Hare, 2023). While students and staff were mentioned in the UK university declarations and are key groups to engage with, there was less explicit discussion of them in the meeting observations, for example, students were not really mentioned outside of

Chapter 4: Documentary analysis and participant observation

teaching. Yet this is not completely reflective of the final output from the meetings, in which students and staff did end up being mentioned considerably though this was not analysed as part of the research. Also, Stein and Hare's (2023) work appears to be at a much deeper level of engagement which was not seen in the declarations or case study university meetings.

How the climate emergency declarations occurred may also influence their next steps. For example, city and local authority declarations in Australia and Italy came about due to pressure from the bottom up and from local citizens (Greenfield, Moloney and Granberg, 2022; Salvia *et al.*, 2023), and at a university in Spain the climate emergency declaration was created from the bottom up as it was written by students (Ferrari *et al.*, 2023). Therefore, these are likely to have a different focus. Regarding staff, Mazhar, Bull and Lemon (2017, p.390) also argue that "a clear business case and contribution to the public good" can lead to their support for university action, and that the role of staff in climate action is important for universities to acknowledge. While this did not come across strongly in the declarations, there was a much clearer sense of purpose in the case study meetings as the group were building an argument for why action is important. Neither the declarations nor meetings articulated why staff may have a key role university climate action.

Given that research and education are two key roles of universities and relate directly to their students and staff, they are important to consider here. In the case study meetings, there were minimal discussions about research. An example of when it was discussed was about the university's research strategy and how the group's work can be embedded in this, which led into conversations about who to target within the university regarding influencing other strategies and plans. Despite research in general being briefly touched upon, research culture and practices were not discussed. In contrast, education and teaching were mentioned, albeit they were not a core topic of discussion compared to other areas. They were discussed in relation to the university working on providing educational information about climate change, including digital courses, and how to address the travel impact of field courses. There was also some scepticism from the group about the university executive team saying that sustainability

Chapter 4: Documentary analysis and participant observation

is being embedded in education. Overall, this suggests that at this stage of responding to the climate emergency, research did not appear to be a focal point in the meetings.

However, the emphasis on research and education in the declarations, as well as frequent mention of their international focus, demonstrates that universities are, to some extent, linking climate change to their core roles and interests. This reflects findings about how universities brand themselves on their websites (Chapleo, Carrillo Durán and Castillo Díaz, 2011). As education is one of the main roles of universities, it is not surprising that teaching students about climate change is mentioned in many climate emergency declarations, either as an area to act upon or that is already being acted upon. Conversely, research appears to be mentioned less in the declarations and only in terms of using research expertise to tackle climate change, rather than addressing the way that research and researchers function within the university and the climate impact that has. Although this does not necessarily mean that research will not be or is not already being looked at, it has not been focused on in these public declarations. While the declarations typically suggest that universities want to be seen as leaders, none go as far as to suggest re-purposing universities, with only a small number mentioning sustainability being at their heart, or other indicative language of more transformative change. In light of this, there remains a risk that climate change and sustainability are seen as additional or peripheral to their core business; in this, they would appear to conform to Huisman and Mampaey's (2018) argument that universities are more comfortable with "legitimised action" and are unwilling to stand out on more fundamental questions that could be asked of the HE sector in a time of climate emergency.

4.5.4 Action and transformation

Both the declarations and case study meetings have some similarities with government climate action, with leadership also a common factor. Commitment, shown through policies, targets and committees, was a key theme in both university and local government declarations, for example in the declarations themselves or in subsequent meetings across local governments in the UK and Canada (Alkhayyat *et al.*, 2023;

Chapter 4: Documentary analysis and participant observation

Harvey-Scholes, 2019). Additionally, there are similarities with local government plans that followed early climate emergency declarations in Australia, which focused on action, co-ordination and partnerships, and leadership (Davidson *et al.*, 2020; Greenfield, Moloney and Granberg, 2022). Central leadership was found to be important for climate action in half of European universities, with over a third having either a specific committee working on the topic or someone in the leadership team dedicated to working on it (Stöber, Gaebel and Morrisroe, 2021). Given that leadership, in addition to engagement at different levels of an organisation, is important for culture change to occur (Kotter, 2012; Kotter and Heskett, 1992; Pollack and Pollack, 2015), it is encouraging to see this somewhat reflected in the present research. The level of commitment and leadership was implicit in the case study meeting observations, by the very fact that the meetings were occurring because of the university's declaration.

The use of targets or goals in the declarations was also reflected in the meeting observations in the way that data was seen as extremely important to their work and getting the university executive team on board. Yet in UK universities more broadly, research with university staff (mainly in strategic planning) found that more than a third did not think their universities had a good grasp of the climate data needed (Owen-Smith, 2023). For example, given that scope 3 emissions are particularly difficult for universities to address (Mazhar, Bull and Lemon, 2017), these could have received less attention in the meetings if it was felt to be too challenging for the group to address. In contrast, it was frequently discussed, perhaps because the group was clearly focused on the climate emergency and therefore were aware of the importance of scope 3 emissions despite the difficulty of reducing them.

Even with respect to achieving emissions reductions from operations, setting targets that are referred to in the declarations does not necessarily mean they will be achieved – as is indicated by the lack of progress to date in the form of HEFCE (2010) and People & Planet (2019) data for universities. However, the latest People & Planet (2023) data does indicate better progress in general from universities. Also, it may be that many targets are not binding and therefore universities can only be held to account informally, for example, by their students and staff or the wider sector. It is nevertheless

Chapter 4: Documentary analysis and participant observation

encouraging that many declarations also mentioned more concrete action and plans beyond target-setting. One promising example in this vein, is the Environment and Climate Emergency Working Group White Paper, published by the University of Exeter six months after their announcement, explicitly stating that this came about as a result of their declaration (Osborne *et al.*, 2019). The case study has already shown that the White Paper was an important influence on their initial work, and it would be unsurprising if it was also influential for the action of other universities given that it was an early example of how they can take the declarations a step further.

It is clear the declarations are only one element of, or step towards, climate action, a point also highlighted by Chou (2021) regarding declarations from local governments in Australia. While the symbolism of climate emergency declarations is not necessarily bad (*ibid*), there is a reputational risk to universities if they are not already taking sufficient climate action or intend to do so after their declaration, particularly given that the majority did not meet their sector-wide targets in 2020/2021 (People & Planet, 2022). However, in Canada, climate emergency declarations were found to be “far from being merely political gestures” and did provide the impetus for achieving climate targets (Alkhayyat *et al.*, 2023, p.228). Similarly, in Aotearoa New Zealand and Italy, the climate emergency discourse generally as well as the declarations themselves were activating and motivating (Cretney and Nissen, 2022; Salvia *et al.*, 2023). This suggests that in other countries, the declarations have had a meaningful impact. While the case study provided an example of how one university took initial action after their declaration, this was an internal process that was not visible to the wider university community or the public. Therefore, it may be difficult for these groups to understand what action universities are taking, contribute to action themselves or hold their institutions to account.

Although this shifted throughout the timeline of the meetings taking place, the meetings considered actions on two levels – firstly, focused on the practical actions that the group needed such as data collection and designing the final document, but secondly also how to position their work so that it would be the most impactful and effective for the university executive team. Yet, the declaration of a climate emergency does not

Chapter 4: Documentary analysis and participant observation

mean that universities are at a particular stage of climate action. The analysis of the declarations shows that there was no link between universities' standing in the People & Planet (2019) University League and when or how they declared, or their stated targets. Also, even though the University of Exeter's White Paper was used as a suitable template for a climate action plan, the University of Exeter is in fact the UK university that has received the greatest amount of funding from fossil fuel companies since 2022 (Colbert, 2023). This suggests that action, or stated intentions to act, does not mean that universities are not also partaking in unsustainable or contradictory activities.

While research into UK councils' declarations found some differences between political affiliation and the level of progress in certain types of authorities (Gudde *et al.*, 2021), there appeared to be no differences between universities in relation to the content of their declarations when analysed against the type of university (Russell Group versus non-Russell Group) and the People & Planet (2019) University League data. However, a greater number of Russell Group universities declared compared to those not in the Russell Group. While it is not clear why this is, it could be that they perceived it to be particularly relevant to their focus on research or that it was seen to be an appropriate issue to speak out on given their self-stated leadership role in the UK HE sector (Russell Group, n.d.).

In their declarations, the universities address the main barriers to sustainable development that were identified by Leal Filho *et al.* (2017). They did this to varying degrees which reflected their institutional priorities and structures. The barriers identified by Leal Filho *et al.* (2017) were institutional barriers to rapid change, sustainability not being a priority, and the lack of dedicated structures to create change. By way of a public declaration and the language used to describe climate change and sustainability, universities clearly give a high importance to tackling it in their declarations. By framing it as an emergency they suggest that rapid action needs to be taken, and some have announced dedicated structures to do so. This demonstrates that universities do, on the face of it, appear to be firmly committed to action and to be pursuing this towards addressing sustainability. A clear example of this is that some universities explicitly mentioned groups or plans to address the climate emergency after

Chapter 4: Documentary analysis and participant observation

the declarations and the case study provided insights into this next step. Yet, overcoming institutional barriers to rapid change, ensuring sustainability is kept as a priority and having meaningful structures to create change (ibid) are areas that need to be addressed and maintained over time.

Promisingly, the participant observation provides some evidence that these barriers are being overcome, or at least that there is will and ambition in some universities to make change happen. The case study university created a dedicated structure to create change with direct communication into the university's executive team, the topic is seen as enough of a priority to convene the group in the first place, and the group was able to work rapidly. However, the speed at which they worked relates to their action plan, rather than implementing the actions themselves. Therefore, although the creation of the group and the work they have been able to do certainly points to a change in how the case study university is addressing the climate emergency, it is still only a preliminary step in actual emissions reductions. This is particularly true with regards to any changes that are more transformative such as cultural and behavioural change, certain challenging areas of emissions reductions (such as international student travel) or considering the purpose of universities.

As well as what was included in the declarations and meetings, it is important to consider what is missing and why, to illuminate what areas may need to be investigated further. In the declarations, universities appeared keen to promote their work on sustainability but there was less focus on making statements about the seriousness of the situation or reflections about transformative change. Given the wider societal context and pressure around the climate emergency, particularly where university staff or students pushed for their universities to declare, it is likely that people would have wanted universities to recognise the severity of the climate emergency and act accordingly, rather than focus on their accomplishments. While the working group members certainly seemed to take the climate emergency and their work in the meetings seriously, it is unknown how the declaration itself or this subsequent work was viewed by the wider university community. Also, given that only two universities had calls to action in their declarations, this shows that they were not being used to

Chapter 4: Documentary analysis and participant observation

encourage staff, students or other stakeholders to take part in climate action in universities.

While there are clearly many practical changes that are needed within universities, behavioural and cultural change are also an essential part of climate action (Adams *et al.*, 2018; Capstick *et al.*, 2021; Climate Change Committee, 2019; Sterling, 2013). Although these did not surface as key themes in either the declarations or meetings, they were mentioned in both - in five declarations and across several case study meetings. This suggests that behavioural and cultural change are not seen as climate actions that universities wanted to focus on in their declarations, whether due to lack of awareness, how others may perceive this, or otherwise. Culture change was explicitly mentioned as being a key part of the Exeter White Paper (it includes suggestions about changing social norms, individual and collective attitudes, visible leadership, grassroots change and responsibility; Osborne *et al.*, 2019), however, this was not a core part of the group's discussions more broadly. One exception that was mentioned in several meetings was regarding the most frequent flyers in the university, an area that the group felt they needed to exercise caution around. This is revealing of culture and practices within universities, as the need to tread carefully suggests that frequent fliers may not be happy with being singled out for having an outsized climate impact or potentially having to change their practices. While the fact that the group recognised this as an important issue in their meetings is encouraging, flying and travel is bound up in academic culture (Hamant, Saunders and Viasnoff, 2019) and therefore does not mean that the frequent flyers themselves will be receptive to change.

Generally, the international focus in the declarations (leadership being framed in an international context and joining with others internationally to make the declarations), was also seen in local government declarations from around the world (Ruiz-Campillo, Castán Broto and Westman, 2021). Yet this was not reflected in the meeting observations. The topic did occur in some conversations in the meetings, where it was viewed as a challenging area to address as well as mentions of air travel from international students, but it was certainly not a core part of the conversations. This may be because the meetings were internally facing, so while it was discussed and included

Chapter 4: Documentary analysis and participant observation

in their final output to the university executive team, it was simply part of the discussions and data collection rather than being used as a way to promote the university's standing, as in the declarations. Additionally, climate action with regards to the internationalisation of universities is particularly challenging to address and tied into academic culture (McCowan, 2023; Tseng, Lee and Higham, 2023), which may be why this was not a core part of the meeting discussions.

The participant observation of the meetings took place over nine months but was not part of a wider case study of the university. Therefore, I did not have context around whether the suggested actions were genuinely ambitious for the university, whether some topics were not discussed, or prior history of action or inaction within the university. It remains to be seen what impact the climate emergency declarations will have, over and above any action that universities were already taking on climate change. Universities should be commended for their public commitment to take climate change seriously, but as one university itself states, these declarations “must be more than warm words” if universities are to be credible (Falmouth University, 2019). There remains an important difference between the specific commitments in the declarations, and arguments for more far-reaching reorientation of purpose and practice of the sector. Staff and students are frequently mentioned within universities' declarations, and it is likely—indeed essential—that universities will be held to account by these groups for the level of action they pursue following their declarations. The declaration of a climate emergency is only a starting point, but provides a firm basis for demanding institutions live up to the promises and aspirations they have put forward.

4.6 Next research phase

Thus far, this research has focused on universities at an organisational level – how they have presented themselves publicly in relation to the climate emergency, and a case study of how one university has responded internally to their declaration. These both sought to identify what these initiatives show about how universities are addressing the climate crisis. Overall, the declarations broadly align with what is known about other declarations in the UK and more widely. Yet the action UK universities are taking to

Chapter 4: Documentary analysis and participant observation

address the climate crisis varies considerably (People & Planet, 2023) and overall, universities' declarations are insufficient by themselves to understand how they are responding to the climate crisis, could bring about or impede change, as well as how any actions will impact or involve the wider university community.

There is a need to understand the broader cultural context within universities and how those working within them engage with climate change and action to address it. It is important to consider where key groups within the university sector fit in terms of engaging with the climate crisis as well as how the sector itself shapes how and whether individuals and communities within universities are able to take action. Therefore, the next section will look beyond the declarations and an organisational level. It will focus more specifically on the people within universities, looking particularly researchers, and their perceptions and experiences of climate action within universities.

Chapter 5

Interviews: results

Contents

5.1 Chapter overview	151
5.2 Interviews: results	152
5.2.1 Institutional climate action.....	152
5.2.2 Research culture, practices and engagement.....	156
5.2.3 Different levels of change, responsibility and power	161
5.3 Next steps.....	163

5.1 Chapter overview

The previous chapter addressed Research Question 1 (How do universities' climate emergency declarations reflect their responses to climate change and what do they mean in practice?). This involved documentary analysis of UK universities' climate emergency declarations and participant observation of a series of internal university meetings as a single case study to explore the next steps being taken after a declaration had been made.

This chapter moves on to the next phase of the research to explore Research Question 2, outlining the results of the interviews (section 5.2). The survey (Chapter 6) also addresses Research Question 2 and the findings from the interviews and survey are jointly discussed in Chapter 7.

5.2 Interviews: results

Three key themes were drawn out from the thematic analysis: 1) institutional climate action 2) research culture, practices and engagement, and 3) different levels of change, responsibility and power. Each is discussed in turn below, including several sub-themes.

5.2.1 Institutional climate action

This theme is divided into two sub-sections that relate to institutional climate action: 1) responsibility, collaboration and progress, and 2) institutional knowledge.

Responsibility, collaboration and progress

Some university staff and one of the external sector specialists spoke about how universities want to be perceived positively regarding climate action, which related to their perception of responsibility at an institutional level. They felt that universities addressing climate change was the “right thing” to do, with a couple stating that they would like to be seen as leaders in this area. Additionally, almost all participants felt that universities have a responsibility to act on climate change. According to one of the sector experts, universities across the UK feel this responsibility “to quite a significant extent”, something that was also reflected by the executive team member who “absolutely” felt that their university had a responsibility to act.

“[In the] collective of the 24 Russell Group [universities] there’s absolutely nobody who doesn’t believe that it is their duty to lead on climate change. Everybody’s clamouring to lead [...] but you know we all agree that we can collectively work together.”

- Executive team member

However, one participant noted that they felt universities as institutions have a role rather than a responsibility, and this is also reflected in answers from some other participants who felt that all organisations should act on climate change and universities are simply part of that. Common reasons for universities’ perceived responsibility were because universities are “thought leaders”, are influential, have an educational role and

Chapter 5: Interviews: results

are large organisations. This also reflected how most participants saw the role of universities more broadly - focused on education, research and knowledge creation.

“Universities should be thought leaders and action leaders. And if we’re not that in society, then we’re not fulfilling our full role, in my opinion.”

- Faculty-level research staff member 2

Institutional climate action was also spoken about in relation to collaboration.

Sustainability staff spoke about this mainly in terms of formal networks including the EAUC and networks within the Russell Group of universities. However, they did also mention other networks, regional groups, and wider collaboration outside of the HE sector. For example, they spoke about connections to their cities and wanting to run in parallel with or support the city’s climate change action, including climate emergency declarations – something that the executive team member recognised in that their university’s declaration came at the same time as others. The university sector networks are used to share both difficulties and best practice around climate change and are also opportunities to learn from or influence other universities. There was a sense that universities are very engaged in this area, although some felt that more collaboration is needed, with similar comments made by the external sector specialist.

“Increasingly there’s a desire for the sector to be seen to have a voice collectively.”

- External sector specialist 1

“Collaboration needs to be increased and communication needs to be increased if we are to seriously tackle climate change and our own carbon emissions.”

- Sustainability team member 4

However, there also appear to be internal changes and challenges regarding how much progress is being made at an institutional level. Some participants spoke about how climate change has influenced how the university operates in recent years and how this is still changing in line with changes in governance and new strategies being published.

Chapter 5: Interviews: results

Sustainability staff felt that declaring a climate emergency changed their university's approach to tackling climate change in comparison to what it was before, for example knowing that they must deliver on promises and also realising the need for financial investment. For the executive team member, this link between words and actions was important, as they wanted to ensure that certain actions had been taken before declaring so that it meant it was more genuine "then we could, you know, hand on heart declare".

Despite the level of responsibility for climate action that participants felt universities had and how they are collaborating, several participants, including sustainability staff, spoke about how they felt the culture of universities needs to change to address climate change.

"One of our key challenges at the moment is making sure that climate considerations are truly embedded into university processes."

- Sustainability team member 1

This included a variety of actions including embedding climate change across the institution rather than solely a sustainability team, more collaboration locally and with other universities, justification of business travel, addressing embodied carbon and using their influence to shape local governance and policy.

Institutional knowledge

Researchers generally had some degree of knowledge about climate change action within their universities. When they were asked if they knew of anything their university was doing to address climate change, responses varied both in terms of types of action and the level of knowledge people had – with some able to provide much more detail than others. Many knew about specific climate change initiatives (for example, electric car charging points, a sustainable travel policy, divestment, addressing the energy efficiency of buildings), though some provided answers that were vaguer, and others only knew about broader sustainability work such as plastics and waste.

Chapter 5: Interviews: results

“When they built the new carpark, and it sounds mundane but I think it is an important thing, they built it with, what do you call them, points for you to plug in your electric car.”

- Researcher 5

“I’m only aware of the initiatives that reach the School these days.”

- Researcher 3

Regarding the climate emergency declarations, most researchers knew that their university had declared, though there were a few exceptions. Although many researchers seemed pleased about the declarations and felt that it gave a good impression, there was some scepticism, with many saying that they had not seen any consequences and that it had not influenced their day-to-day practices at work.

“In principle I support it but [...] I’m not sure if it’s been demonstrated that anything has really changed. It seems a bit tokenistic.”

- Researcher 9

“[I feel] slightly cynical but you know, jolly good. But I think it probably gives people at Cabot [Institute for the Environment], for example, leverage.”

- Research centre staff member 2

There were also insights into how knowledge about university climate action is disseminated. The executive team member felt that their university had an ability to influence others and that there needs to be more consideration of how to communicate successes as that could be an important part of changing people’s behaviours. However, sustainability staff felt that although they try to communicate a lot about their climate change work internally and hope that knowledge about it is widespread, they could not be sure. One person said that knowledge of their work is “sometimes frustratingly low” despite lots of engagement opportunities. They also stated that a lack of time and resources were barriers to spreading the word about their work on climate change, and that communication about their work needs to be increased. Related to

Chapter 5: Interviews: results

this, they felt that institutional processes were slow and there were still some people within the universities that they needed to persuade on climate change action, including researchers. Although the researchers had some knowledge of universities' climate action, overall, the interviews suggest that there needs to be more engagement within universities to share information about their progress.

5.2.2 Research culture, practices and engagement

There are two sub-themes explored below: 1) overall research culture and practices, and 2) researchers' engagement with climate change.

Overall research culture and practices

Researchers spoke about the different ways they felt they must practice their research to be successful. These insights were useful as I wanted to better understand the broader context of research culture and practices before asking about climate change in relation to this. Common themes included publishing, networking and getting funding, which emphasised the role of particular practices by suggesting they are mandatory to conducting their role. Research culture was seen as involving these specific activities but they also spoke more widely about how these practices were enacted and what impact they had, such as long working hours and difficulty in separating their work life and private life. They felt that this research culture was influenced by people with power at the top level of the university or people with decision making powers such as the Head of Research or Head of School, as well as the wider HE landscape and funders. Despite a lot of negative responses about research culture and practices, many participants also described what they felt it means to be a researcher in a positive and thoughtful way such as being curious, having freedom and undertaking work that helps others.

“Having an international reputation [...] assists your number of publications, it assists your citations. That adds up to feedback on your promotion possibility. It feeds back into how much funding you might get.”

- Researcher 3

Chapter 5: Interviews: results

“You don’t have those kind of set hours and times which I think tends to be perceived as being very liberating [...] and it is in many ways, it is very liberating, but it’s also oppressive because it basically means that you never stop.”

- Research centre staff member 2

The literature shows that international travel appears to be important for universities and being a researcher, as well as the climate impact it has (Hoolohan *et al.*, 2021; Hopkins *et al.*, 2016; Universities UK International, 2023b). The results from the documentary analysis also showed that the climate emergency declarations had an international focus, demonstrating that it is of importance to universities. Therefore, I wanted to ask questions on this topic to gain a better understanding of the research culture in this area. All researchers felt that getting known internationally is an important part of being a researcher, and therefore research culture. As well as it being important for the university or their career in terms of promotions, professional development and networking, some felt that the importance of getting known internationally varied depending on their research subject as well as on a personal level such as whether they enjoy traveling or whether it matters to them. They felt that an international reputation was mainly gained through publications, conferences and networks. This was also acknowledged in one interview with regards to my own research role:

“No doubt as you’ll know, as an early career researcher carrying out your PhD, that the best way that you build your network and portfolio is travel all over the world doing conferences and meeting people.”

- Sustainability team member 2

Researchers’ engagement with climate change

I explored whether participants perceived researchers to be a particularly important group in relation to climate action or not. Most researchers felt that as part of the university’s research community, they themselves had a responsibility to act on climate change and influence the way the university addresses it. However, there was uncertainty from a few people, asking how they would go about engaging in this and

Chapter 5: Interviews: results

questioning whether there was something special about researchers compared to other people within universities.

“As part of the research community, one thing we can do is normalise not having to travel and I think that would be certainly a way to help and I think there is a responsibility there.”

- Researcher 2

“I think we all do [have responsibility], don't we? Like is there something special about researchers? [...] There has to be structural change.”

- Research centre staff member 2

All researchers were concerned about climate change. This covered a variety of reasons with common themes including inequality, children and future generations, speaking about climate change as “terrifying”, “a mess”, “shocking” and “very important”. Yet this level of concern does not appear to translate to action within their own job roles. When some researchers were asked whether they think about climate change when doing their job, there were mixed responses. Most said they did think about it when doing their job, but this was mainly with regards to travel such as when taking long haul flights or commuting. A couple of researchers said they did not like to think about climate change when they do their job because they find the topic distressing. Apart from one mention of integrating climate change into their research, travel was the area where researchers specifically mentioned changing their behaviour and actively engaging in climate action. Others spoke about this disconnect and contradiction between their thoughts on climate change and how they acted, or not, in response to it. This suggests that climate change could be having a considerable impact on researchers, though in some ways (such as their level of concern) more than others (such as their level of action).

“I think about it, but I think it doesn't affect my behaviour.”

- Researcher 11

Chapter 5: Interviews: results

“Being somebody who works on environmental issues [...] and also having a job that is necessarily very carbon intensive is a difficult position to occupy, I think. I do think about it a fair bit even if I’m not sure how to resolve those contradictions.”

- Researcher 9

With regards to climate change impacting researchers at work, most said they had not currently noticed any changes in their job due to climate change. A small number of participants mentioned that any changes they had seen were within teaching or research topics rather than how they actually practiced their research. When asked about research practices specifically, most researchers felt that this would not change because of any climate action that their university was taking, though one research staff member at a faculty-level did state the importance of funding bodies in driving behaviour change as well as universities themselves. There did not appear to be much pushback about whether university climate action could impact their research practices. Many researchers said that they would like to see changes, though this mainly related to travel. Most researchers also thought that their university’s climate emergency declaration would not impact their work (yet), and there was also recognition of the broader influence their university can have. Additionally, one researcher stated that they hoped any action their university takes as a result of the declaration would challenge their current working practices because at present, it does not currently feel like they are seeing any changes in their role.

“I’d hope that it [climate action within research] would make my life a bit more difficult to be honest.”

- Research centre staff member 2

“You do get a big steer institutionally, from what the institution expects. But the institution can be hypocritical. It can on the one hand say ‘we have a commitment to sustainable research and being carbon neutral’ and all those things but on the other hand say ‘we want our research to be internationally renowned’.”

Chapter 5: Interviews: results

- Researcher 6

Another area of engagement that researchers spoke about was the barriers to climate change action that they face within universities. Some of these related to university processes and changes to travel provision, for example, increased complexities in trying to book trains rather than flights. Others spoke more generally about feeling powerless about their personal efforts to address climate change, uncertainty about how they could influence their university's strategic decisions or their uncertainty about how to resolve contradictions in their role. This suggests that there might be both practical and cultural barriers to climate action in universities, as well as a degree of uncertainty about how to act.

"I was trying to really push [to] go on the train and I wasn't going to fly [...] It's like the risk assessment for example, it's the cost, no-one knows how to book a journey like that. [...] There's no precedence for it and there's no support. The default is the flying: that's what is known."

- Researcher 1

"I'm an early career researcher – if I want to have a decent career I have to do these things like participate in international conferences. [...] So there's only so far that my individual action can go."

- Researcher 9

Yet researchers did offer some suggestions for how they could address climate change in their job roles and therefore engage more. This mainly included changing travel habits and incorporating climate change into their teaching, though a variety of other suggestions were offered such as arguing for online provision for conferences and incorporating it into their research. However, only a few mentioned that they had already taken specific actions to address climate change in their roles, for example through changes to travel. These findings show a disconnect between the current impact on researchers' roles and what they would like to see happen, suggesting that researchers may be open to and actively encourage change in this area, particularly

Chapter 5: Interviews: results

given they are able to offer some suggestions for how to do this. Though given that few had already taken climate action within their roles, a deeper exploration of this area is likely to be needed.

5.2.3 Different levels of change, responsibility and power

There were several topic areas where there were differences between perceived responsibility and power to act on climate change in universities, as well as variations in how change had, or could, occur. Some researchers were able to provide more insights into certain areas more than others, such as those at more senior levels who had a greater understanding of university changes over time or university structures, particularly those responsible for research centres and research at a faculty/school/college level. For example, there were reflections from one of the staff members at a research centre about how climate change was seen as niche in relation to their subject area a decade ago but this has changed and is now more common, with similar thoughts from the executive team member who noticed that many colleagues are taking different environmental decisions than they would have done ten years ago. However, their responses to many topics such as their perceptions of what it means to be a researcher, culture and practices, and perceived responsibility to tackle climate change, were similar across all researchers. This suggests that there may be several areas of commonality across different types of researchers, which the next phase of the research should be able to confirm with regards to how widespread these are.

When asked who should be responsible for climate action in universities, many participants responded “everyone”. However, when explored further, this perceived responsibility varied in terms of subject expertise and those who were seen to have more influence or power.

“The actual power will be with people who just work in the area.”

- Researcher 11

Chapter 5: Interviews: results

“I’m not sure how [my discipline] can help but I definitely think those within the science community, science researchers and climate change researchers like yourself [...] should be trying to influence the university’s policies.”

- Researcher 4

“If certain members of the research community, wider than people who are working on things like climate change, see that things could be done differently then I think they definitely should be listened to.”

- Researcher 2

Many researchers felt that those who had subject expertise in climate change or sustainability more broadly had a greater level of influence or responsibility to act. In turn, this suggested that those who worked in different areas were felt to have less of a role, though some people did mention that their viewpoints should be taken into account even if they do not have subject area expertise. While differences between subject areas mainly related to the perceived level of responsibility for addressing climate change and influencing university action, there were also some comments about differences in awareness between subject areas.

Outside of research, perceptions of who holds responsibility and power varied for different levels within universities. Responsibility and power were commonly seen to be held by key people at the top of the university who have financial power, can change policies and set an example. Middle management (for example, at departmental/school level) was also seen to be important, such as those who have a say in promotions criteria. However, there was also a recognition of bottom up or individual change in terms of people adopting sustainable working practices, making smaller changes collectively and being able to support and implement actions set up from higher up within the university.

Impact of Covid-19

Although the impact of Covid-19 was not specifically asked about, due to the time at which the interviews were conducted (November 2020 – February 2021), it is

Chapter 5: Interviews: results

unsurprising that Covid-19 was a recurring theme. When researchers were asked whether they had noticed any changes in their job due to climate change, Covid-19 was often mentioned. During the interviews with researchers, Covid-19 was almost exclusively mentioned in terms of having an impact on travel, particularly in relation to conferences and networking. For some researchers, this disruption to travel practices was seen as having implications for whether they need to travel to be successful. Many also felt that the new practices which had been adopted during the pandemic would, or should, impact climate action within universities.

At a wider university level, Covid-19 was seen to have “brought into focus a lot of issues around teaching and learning [...] particularly the shift to online” and universities were perceived as likely to “want to be seen to be supporting a green recovery” (external sector specialist 1). However, it was also seen by a few participants to have slowed down or changed climate action.

“Covid just kind of stopped us in our tracks and the worry is that the momentum’s lost and we don’t gain it again.”

- Sustainability team member 4

5.3 Next steps

The interviews provided valuable insights into climate action, culture and practices in universities and research. The results showed that universities were seen to have a responsibility to take climate action and that collaboration on the topic was important, though some felt that the culture of universities may need to change to address climate change. Researchers had varying levels of knowledge about university climate action and felt that the climate emergency declarations have had little impact on their work. Yet the results showed that researchers were highly concerned about climate change and most felt they had a responsibility to act, though researchers with greater subject knowledge were seen to have greater responsibility or influence. Some barriers and enablers to climate action were also spoken about, such as changes to travel and uncertainty about how to act.

Chapter 5: Interviews: results

Key results will be taken forward to inform the next and final stage of the research: a UK-wide survey of researchers (Chapter 6). Given the close link between the interviews and survey stages which both address Research Question 2, the results of both will be discussed jointly in Chapter 7.

Chapter 6

Survey: results

Contents

6.1 Chapter overview	167
6.2 Results	168
6.2.1 Overview of key findings	168
6.2.2 Demographics	172
6.2.3 Main findings	176
Researchers' views on universities.....	176
Responsibility	176
University climate action	177
Climate emergency declarations	180
University communication.....	181
Research	181
Researchers' engagement with climate change	184
Action by researchers	186
Worry	188
Understanding of peers.....	189
Barriers	190
Enabling factors.....	193
6.2.4 Professional differences between researchers	195
Individual factors: subject areas	198
Individual factors: career position	211
6.3 Next steps.....	221

6.1 Chapter overview

The previous chapter partially addressed Research Question 2 (How does university and research culture shape the way that academic researchers engage with climate change?) through interviews with university staff and staff from organisations with expertise on UK Higher Education.

In combination with the previous chapter, this chapter continues to address Research Question 2 through the results of a UK-wide survey of academic researchers. Section 6.2 covers the demographics of the participants before moving into the main findings. As well as overall findings, I look at professional differences between researchers, which includes a series of hypotheses and exploratory questions. A joint discussion of the interviews and survey can be found in Chapter 7.

This survey research has already been published as a peer-reviewed paper (Latter, Demski and Capstick, 2024a). The content has been incorporated throughout relevant chapters and expanded upon.

6.2 Results

This section outlines the results of the survey, starting with an overview of the key findings (6.2.1). Due to the large volume of results from the survey, it is important to provide this synthesis upfront before going into greater detail.

This is followed by the full results of the survey. Firstly, demographics are outlined such as participants' professional characteristics and which universities are represented in the responses (section 6.2.2). The main findings then cover researchers' views on universities and researchers' engagement on climate change (section 6.2.3). Finally, I outline how researchers with different professional characteristics (subject area, climate/non-climate researcher, career stage) responded differently to the survey questions (section 6.2.4).

A total of 1,853 survey responses were received – over nine times more than expected.

6.2.1 Overview of key findings

What do researchers think about universities?

- A large majority of researchers think that a high responsibility for addressing climate change in universities lies with government and policymakers (90.7%), research institutions themselves i.e. universities and colleges (82.3%), and research councils (74.7%)
- Over half of researchers (54%) think that addressing climate change is a priority for their university, but almost half think their universities are not doing enough with regards to research activities (45%) and the university's own impacts and emissions (48.4%)
- 69.6% of researchers know at least one action their university is taking to address climate change, though 18.8% know nothing

Chapter 6: Survey: results

- The majority (53.3%) of researchers think that climate emergency declarations are making “only a little” bit of difference in addressing climate change at universities
- 66.2% of researchers think their university does not provide them with information about how to conduct their research in a low-carbon way
- There is high support (63.8%) for changing the research culture of universities to better address climate change
- More than half of researchers (54.7%) think that funding processes do not incentivise low-carbon approaches to research
- Researchers highlighted ways in which *their universities* could better incorporate climate action into their research practices, mainly: travel, funding, encouragement and incentives, university facilities, collaborating with other researchers, training/guidance/policies and conferences
- Researchers highlighted ways in which *they themselves* could better incorporate climate action into their research practices, mainly: less or more sustainable travel, climate change as a research topic, reduce consumption and waste, hybrid/remote working, and increase their understanding and awareness.

How do researchers engage with climate change?

- Almost all (94.8%) researchers are extremely/very/somewhat worried about climate change
- Almost all (95.8%) researchers say that their own views about climate change affect their practices, choices and activities at work
- Almost all (95.5%) researchers want to do more on climate change within their university, though less (77.3%) say they want to do this specifically through their role as a researcher
- Almost half (48.5%) of researchers do not know how to address climate change within their role

Chapter 6: Survey: results

- Researchers are unsure about what their peers think about climate change with regards to their role at work. Nevertheless, there is a very high level of peer support (91.7%) for climate advocacy by other researchers
- Half (50.2%) of researchers think that senior academics and researchers have a high responsibility for addressing climate change in universities, whereas only just over a quarter (26.2%) think that early career researchers do
- Researchers face multiple barriers to acting on climate change in their role. High workload is the biggest barrier (57.5%), followed by uncertainty about what actions to take (45.5%), lack of agency or power (37.1%) and inflexible university processes (32.2%)
- The biggest incentives or enablers for approximately half of researchers to do more on climate change through their roles are knowledge of what actions to take (51.1%), more institutional support (50.4%) and reduced workload (49.7%).

What differences are there between researchers?

Climate versus non-climate researchers

- Compared to non-climate researchers, climate researchers are more likely to:
 - be worried about climate change
 - think they know how to address climate change at work
 - think their role as a researcher, and their subject area, are more relevant for addressing climate change
 - think their work has, or could have, a positive impact in addressing climate change
 - think it is appropriate for researchers in general to advocate for university action on climate change
 - think that a lack of funding for climate related research and inflexible university processes are barriers to them taking climate action at work

Chapter 6: Survey: results

- Non-climate researchers are more likely than climate researchers to say that uncertainty about what actions to take and lack of staff expertise are barriers to them taking climate action at work

Career stage

- Early and mid-career researchers face a greater number of barriers in doing more on climate change through their role at work than senior researchers/professors
- The types of barriers to action differ between career stage
- Senior researchers/professors are more likely than early career and mid-career researchers to think they know how to address climate change at work
- Senior researchers/professors are more likely than early or mid-career researchers to think that senior academics and researchers have a high responsibility for addressing climate change in universities

Subject area

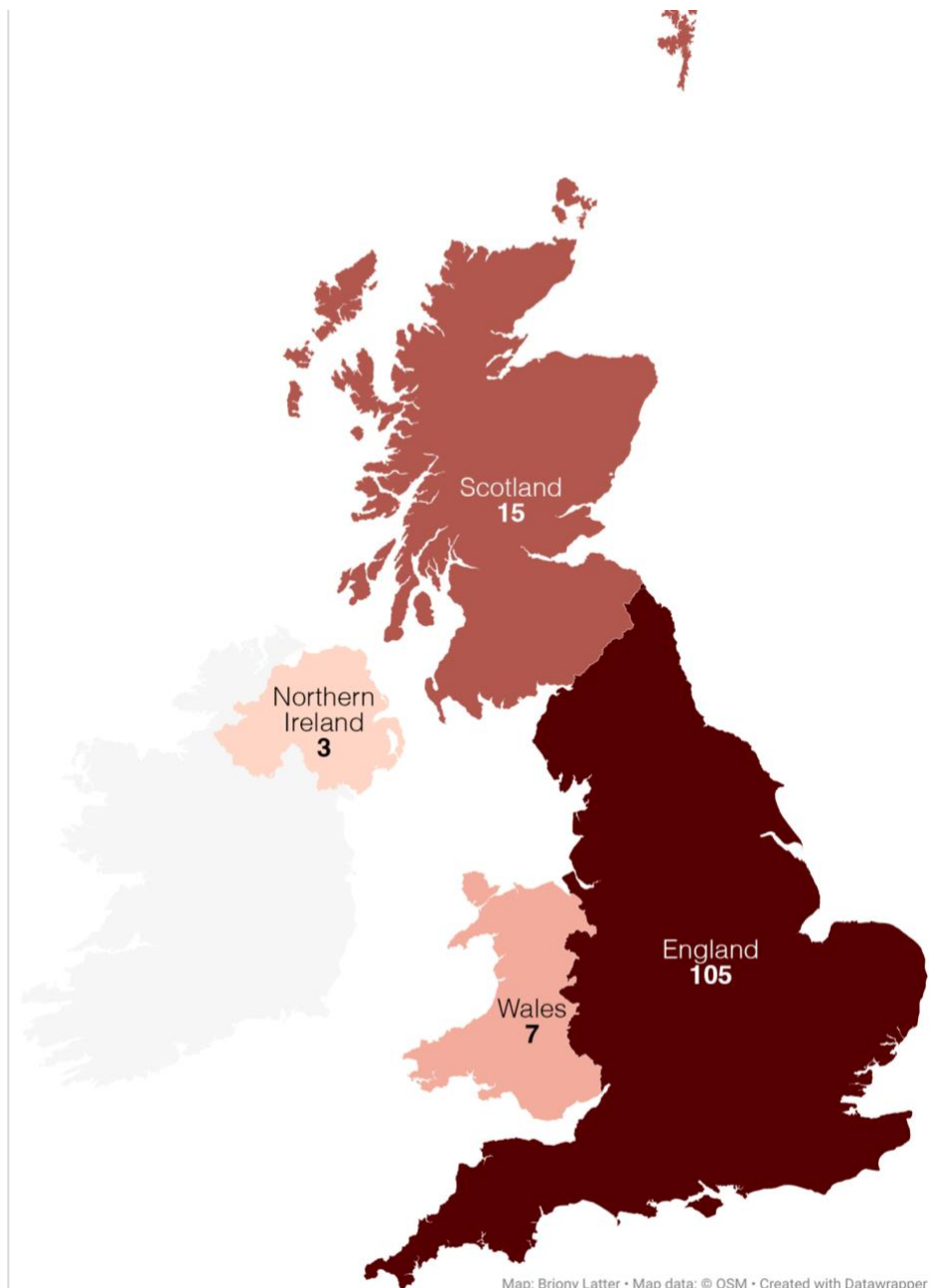
- Researchers from social sciences and arts & humanities are more likely than medicine, health & life sciences researchers to think it is appropriate for researchers in general to advocate for university action on climate change
- Medicine, health & life sciences researchers are less likely than researchers from other disciplines to think that their subject area is relevant for addressing climate change.

These findings are outlined in further detail below. For additional data, refer to Appendix D.

6.2.2 Demographics

Survey responses were received from 127 UK universities. This covers 90% of the total universities contacted (140) and 79% of UK universities (161; Amber *et al.*, 2020). All but one are members of Universities UK. The majority of universities were in England (105), with 14 in Scotland, six in Wales and two in Northern Ireland (see Figure 1).

Figure 1. Universities in the United Kingdom who responded to the survey (Q2)

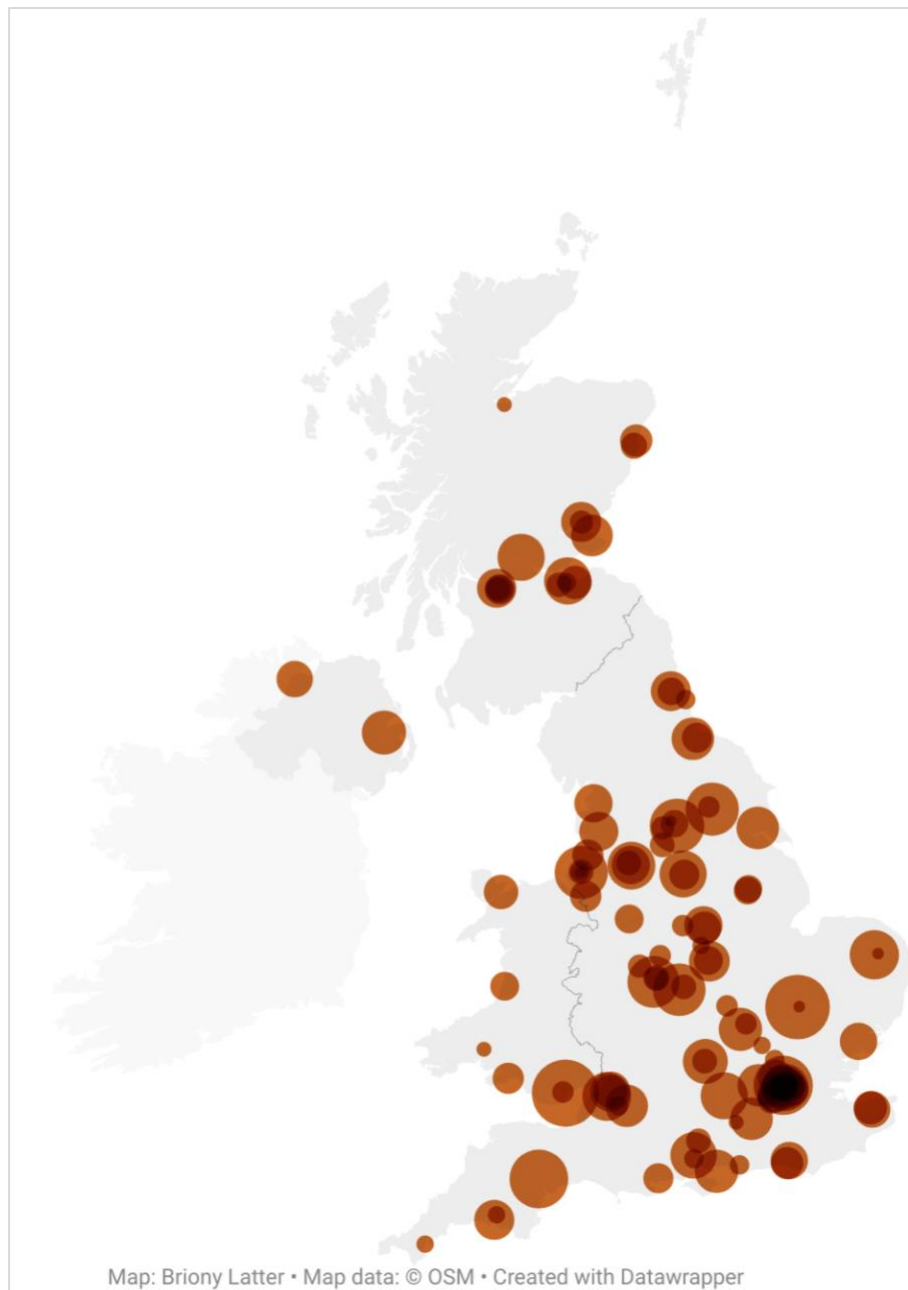


There were 1,505 responses from England, 43 from Northern Ireland, 197 from Scotland and 108 from Wales. The Open University is UK-wide, therefore data points on

Chapter 6: Survey: results

the map (Figure 1) total 130 as it is included for each country. Figure 2 shows the distribution and amount of survey responses from universities across the UK.

Figure 2. Distribution and amount of survey responses across the UK (Q2)

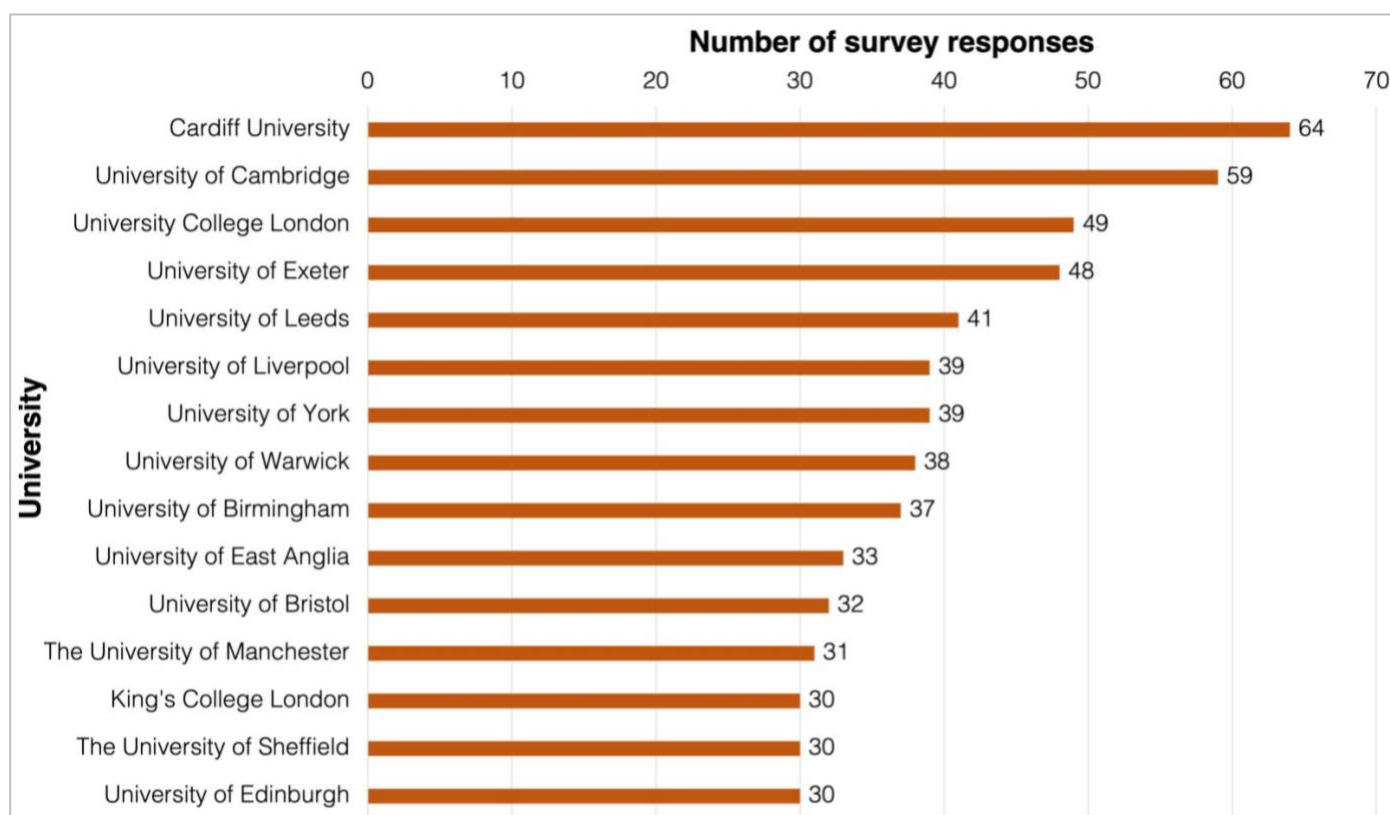


The top fifteen universities regarding the number of responses are shown in Figure 3. A further 22 universities had between 20-30 responses each. 29 universities had between 10-19 responses, and 60 universities had 9 or less responses each. The median

Chapter 6: Survey: results

number of responses per university is 10.5. See Appendix D3 for the full breakdown of responses per university.

Figure 3. Top 15 universities with the highest number of responses (Q2).



The professional characteristics of the survey participants are shown in Table 10. All disciplinary groupings were represented in the survey. The groupings were taken from a survey by Guthrie *et al.* (2017), which is based on how disciplines are grouped for the Research Excellence Framework (REF). However, the Higher Education Statistics Agency (HESA), which provides data for the higher education sector in the UK, groups disciplines slightly differently. When comparing this survey data to the HESA (2021) data, it is largely reflective of the UK higher education sector. In this survey, medicine, health and life sciences are slightly overrepresented (32.3% compared to 26% UK-wide), and physical sciences, engineering and mathematics are slightly underrepresented (19.4% compared to 28% UK-wide). The survey is near-representative for social sciences (31.9% compared to 29% UK-wide) and arts and humanities (16.3% for both the survey and UK-wide).

Table 10. Professional characteristics of the survey participants.

Characteristic		Percentage and number
Discipline	Arts and humanities	16.3% (302)
	Medicine, health and life sciences	32.3% (599)
	Physical sciences, engineering and mathematics	19.4% (360)
	Social sciences	31.9% (592)
Work involves researching or teaching on climate change	Yes (major part)	11.3% (209)
	Yes (minor part)	23.7% (439)
	No	65.0% (1,205)
Current position	Early career	43.2% (800)
	Mid-career	28.6% (530)
	Senior/professor	26.3% (487)
	Other	1.9% (36)

Although the survey was about climate change, it was important that it was not skewed towards those who work in the area. The survey was successful in this respect, as the majority of participants (65%) do not conduct research on or teach about climate change. Just under a quarter (23.7%) say that climate change is a minor part of their research or teaching work, and 11.3% say it is a major part of their work.

The results also show that participants' positions at work are varied. A large number describe themselves as early-career (43.2%). 28.6% describe themselves as mid-career, and a similar amount (26%) describe themselves as senior/professor. 1.9% chose to self-describe and did not easily fit into these categories or it was not possible to identify their career stage, for example "Research Technician" and "end career, but not senior".

Overall, the demographic data shows that the survey achieved its aim of reaching a broad range of participants to make the data as representative as possible of

Chapter 6: Survey: results

researchers in UK universities. The majority of UK universities (79%) were represented, and participants work across all disciplinary groups and career stages. Most participants are not involved with climate change research or teaching, which helps to ensure that their responses to the survey questions are not influenced by this. A sample size of only 384 is needed to be representative of the population (254,975 total research staff and PhD researchers; HESA, 2022a; HESA, 2022b) at a confidence level of 95% and a margin of error of 5% (Qualtrics, n.d.). Although some demographic data was not collected (for example, gender, age, ethnicity), there are a broad range of responses across universities, disciplines and career stages.

6.2.3 Main findings

This section explores the bulk of the data collection from the survey. In addition to the quantitative responses, a very large amount of qualitative data was collected from the open text boxes – 5,082 comments in total, including:

- 1,498 comments (81% of total participants) regarding what they know about their university's climate action (Q9)
- 1,260 comments (68% of total participants) regarding opportunities for universities to better incorporate climate change into research practices (Q23)
- 1,248 comments (67% of total participants) regarding what researchers themselves could do to better incorporate climate change into their research practices (Q24)
- 763 comments (41% of total participants) for 'Do you have anything else you would like to add?' (Q25).

Open text box responses were also received for some questions where 'other, please specify' was an option or where the question was only shown to some participants (72 comments from those who do not want to do more on climate change, and why that is the case - Q19).

Researchers' views on universities

Responsibility

Chapter 6: Survey: results

I explored researchers' perceptions of who holds responsibility for addressing climate change in universities, finding that 90.7% think that government and policymakers have a high responsibility. This was closely followed by research institutions themselves (universities and colleges) at 82.3% then funding bodies such as research councils at 74.7%. When also accounting for a medium level of responsibility, these were all above 97%.

"Personally, I try to cut down on driving, cut out air travel, eat organic when possible, recycle, use less paper etc etc but it is really up to governments and powerful institutions, including universities, to make the changes!"

- Mid career (social sciences)

Both early and senior career researchers were viewed as having a high/medium level of responsibility to act (70.4% and 91.8% respectively for each career stage), with considerably more participants placing a high responsibility on senior academics and researchers (50.2%) compared to early career researchers (26.2%). Only 39.5% of researchers think that publishers have a high responsibility.

Some researchers also felt that other groups had a high or medium responsibility to address climate change within universities and provided their own answers in the 'other' response option. The figures for the following answers are of the total responses to the question (1,853) and are therefore very low, as most participants responded using one of the existing answer options. The most common answers were everyone (3.2%) and students (3.2%), followed by industry (2.6%), professional staff (1.7%) and senior management (1.6%).

The results clearly show that researchers think that responsibility is needed across all the aforementioned groups, as when accounting for both high and medium responsibility, all groups were between 70.4% and 98.3%.

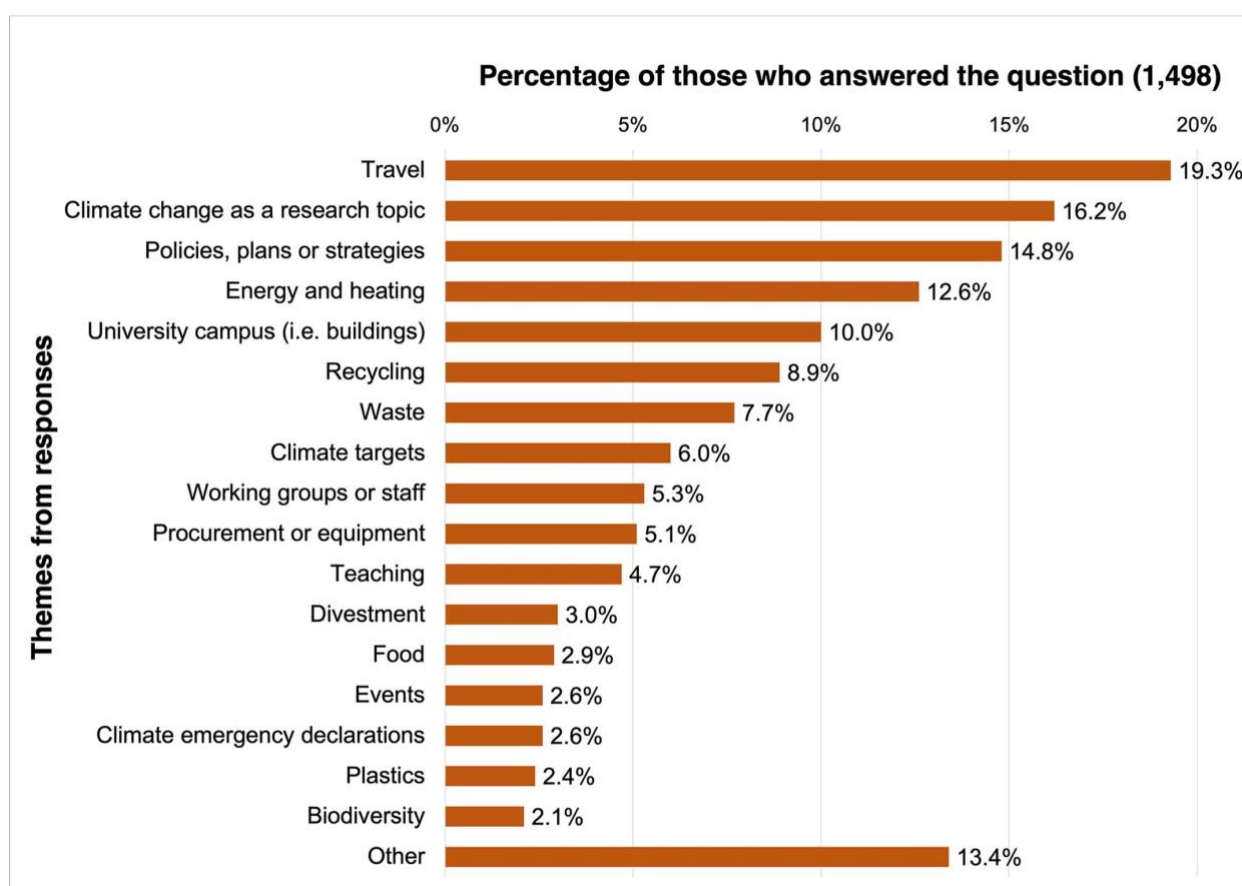
University climate action

Chapter 6: Survey: results

When asked about universities' attitudes towards climate change, the majority (54%) of researchers think that addressing climate change is a priority for their university in terms of its own impacts and emissions, compared to 25.3% who think it is not. However, almost half (48.4%) of researchers think that their university is not doing enough to address climate change in this regard, compared to 32.1% who think it is.

Survey question 9 (1,498 responses) used an open text box and content analysis to explore researchers' level of knowledge about what climate action their university is taking. The most common areas of action that researchers knew about can be seen in Figure 4. The following percentages are in relation to those who answered the question, not the total number of survey participants.

Figure 4. Content analysis: What do you know about what your university is doing to address climate change?



The most common areas that researchers knew about related to travel (19.3%), climate change as a research topic (16.2%) and policies, plans or strategies (14.8%), with

Chapter 6: Survey: results

lower levels of knowledge about areas such as procurement and equipment (5.1%) and teaching (4.7%). Wider environmental issues were also mentioned: recycling (8.9%), waste (7.7%) and plastics (2.4%).

While a majority were able to describe at least one thing that their university is doing to address climate change (42% have knowledge of multiple areas, 27.5% have knowledge of only one area), around 18% of those answers were vague and did not provide detailed information about what they knew (for example, “there’s a whole strategy” and “various initiatives”). Overall, 18.8% knew nothing about what climate action their university is taking. However, many of those who said they knew very little or nothing did then proceed to provide some examples.

“I am aware of its strategy & objectives; less on actions & outcomes.”

- Senior/professor (social sciences)

“I know that it talks a lot about it [climate change] in the University strategy but I don't know what it is actually DOING.”

- Early career (physical sciences, engineering & mathematics)

As well as what researchers know about their university’s climate action, many responses to this question contained information about how researchers think about what their university is doing (or not). More than 100 researchers (7.3%) mentioned contradictions in their university’s approach to climate action, greenwashing, lip service or token efforts. A small number of researchers thought that university climate actions may actually be due to other factors instead, such as Covid-19 or financial interests. One specific example of what researchers saw as a contradictory approach to climate action was regarding cycling facilities. This contradictory approach was mentioned by seven researchers, and though there were some positive comments by others about provision of locker and storage space, there were also barriers.

Chapter 6: Survey: results

“There are mission statements, some specific research projects and shifts in energy purchasing policy. However, I don't believe it is embedded in what the university does.”

- Mid career (social sciences)

“Active travel, for instance, is encouraged in theory, but facilities for secure cycle parking, or storing/drying wet clothes during the day, are next to non-existent.”

- Semi-retired (physical sciences, engineering & mathematics)

There were also a lot of comments (88) from researchers who felt that their university was not doing enough on climate change, or that their action was not in line with the scale of the problem. This also related to comments about disjointed action, for example the difference between departmental and university-wide level action.

“It is undoubtedly being considered more in other departments and at senior management level but limited detail drips down.”

- Mid career (medicine, health & life sciences)

“[There is a] scheme to incentivise bus and bike usage - which is insufficient given that 40% of the staff live at least one to 2 hours away by car.”

- Mid-career (social sciences)

Nevertheless, there were a small amount positive comments (19) from researchers about their university, for example:

“Sustainability is really important to [my university] [...] I trust I can follow their rules and regulations and help them achieve this as a member of staff here.”

- Early career (social sciences)

Climate emergency declarations

The majority (53.3%) of researchers think that climate emergency declarations are making “only a little” bit of difference in addressing climate change at universities.

Chapter 6: Survey: results

28.4% think that they are making a “moderate amount” of difference, and only 5.6% think that they are making “a great deal” of difference. 12.7% think that the declarations are not making any difference at all.

When asked about their university’s climate action, 2.6% of researchers (of the 1,498 responses from Q9) said they were aware that the university has declared a climate emergency. Of the 2.6% of researchers, 64.1% think the climate emergency declarations are making “only a little bit” of difference.

“My university has declared a climate emergency, yet the only points that are addressed are understanding and listening. These are passive, with outcomes that are difficult to define. An emergency requires action and urgency!”

- Early career (arts & humanities)

“The sense of climate emergency is lacking - despite having declared one.”

- Mid career (social sciences)

University communication

Open text box responses from question 9 showed that researchers mostly hear about university climate action through emails or newsletters, though several (21) said that they do not always engage with university communication on this, partly due to high workload. Researchers are fairly evenly split on whether they think they receive enough information from their university about what it is doing to address climate change or not. Almost half (45.7%) of researchers say that they do not receive enough information, compared to a slightly lower amount (40.2%) who say they do.

Research

As well as questions about their university generally, I explored researchers' perceptions of research culture and practices. When asked about information provision from their university regarding how to conduct their research in a low-carbon way, 66.2% say that their university does not provide enough information about this, compared to only 16.9% who think that it does. When asked specifically about whether their university is

Chapter 6: Survey: results

doing enough to address climate change in terms of its research activities, there was considerable uncertainty - more than a quarter (26.6%) neither disagree nor agree. However, a high percentage think that their university is not doing enough in this regard (45%), compared to 28.4% who think it is doing enough. When asked whether it is a priority for their university, a slightly lower percentage (42.9%) think it is, compared to 33.6% who think it is not.

“We have green and sustainability policies and practices in place but my perception is that these have more of an environmental (both natural and built) focus rather than in the context of research activities as such.”

- Senior/professor (medicine, health & life sciences)

I also asked about university processes and research funding processes in relation to low-carbon research. Similarly to the above, when asked whether they think that their university's processes incentivise low-carbon approaches to research, almost a third (32.5%) neither agree nor disagree. 45.7% of researchers think that their university's processes do not incentivise this, compared to 21.8% who do.

There is considerable uncertainty regarding whether participants felt that research funding processes incentivise low-carbon approaches to research, with 30.6% stating that they neither agreed nor disagreed, suggesting that participants may simply not know. However, there was a clear difference between the amount of participants who thought they it was not incentivised (54.7%) compared to those who did (14.8%).

“{There is} a lot of climate-focused research, but I don't think anyone scores the carbon footprint of their grants (maybe we should).”

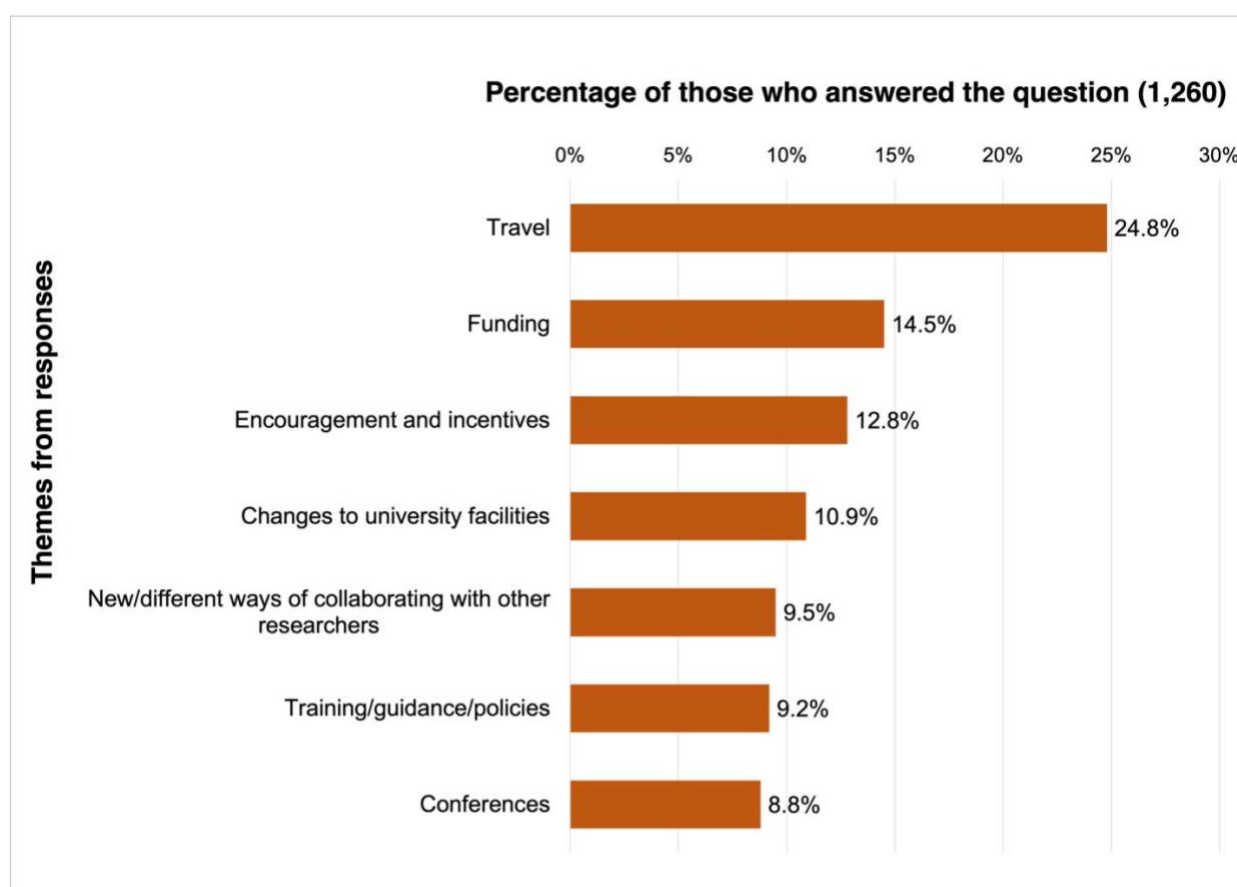
- Mid career (medicine, health & life sciences)

Overall, there is high support for changing the research culture of universities. The majority (63.8%) of researchers think it is necessary to change the research culture in their university to properly address climate change, compared to only 16.2% who think that it does not need to change.

Chapter 6: Survey: results

Looking forward to how changes could be made, researchers highlighted ways in which their universities could better incorporate climate action into their research practices. There were a very large number of responses (N = 1,260) provided on this topic in open text box responses, indicating a high degree of interest and engagement from survey participants. Figure 5 shows the main areas mentioned in these responses. The following percentages are in relation to those who answered the question, not the total number of survey participants.

Figure 5. Content analysis: In your view, what opportunities are there for your university to better incorporate climate change into your research practices?



There were a broad range of responses which mainly related to changes to travel (24.8%), as well as funding (14.5%) and encouragement and incentives (12.8%). Themes with a smaller percentage of responses have not been included in the Figure above. Although 11.7% were unsure and 6.7% felt there were no opportunities, the majority shared a very wide range of ideas.

Chapter 6: Survey: results

“Make climate change activities part of the strategic career framework. ie part of appraisal goals etc.”

- Mid career (medicine, health & life sciences)

“Perhaps universities could leverage their positions to demand consumable suppliers reduce their own footprint?”

- Early career (physical sciences, engineering & mathematics)

“Learn what we can do in our research projects to implement strategies to reduce our carbon footprint, but we haven’t received any information or training on what we can actually do as researchers.”

- Early career (social sciences)

Although travel is a key area where researchers felt there were opportunities for climate action, one researcher highlighted a potential negative impact of changes to travel:

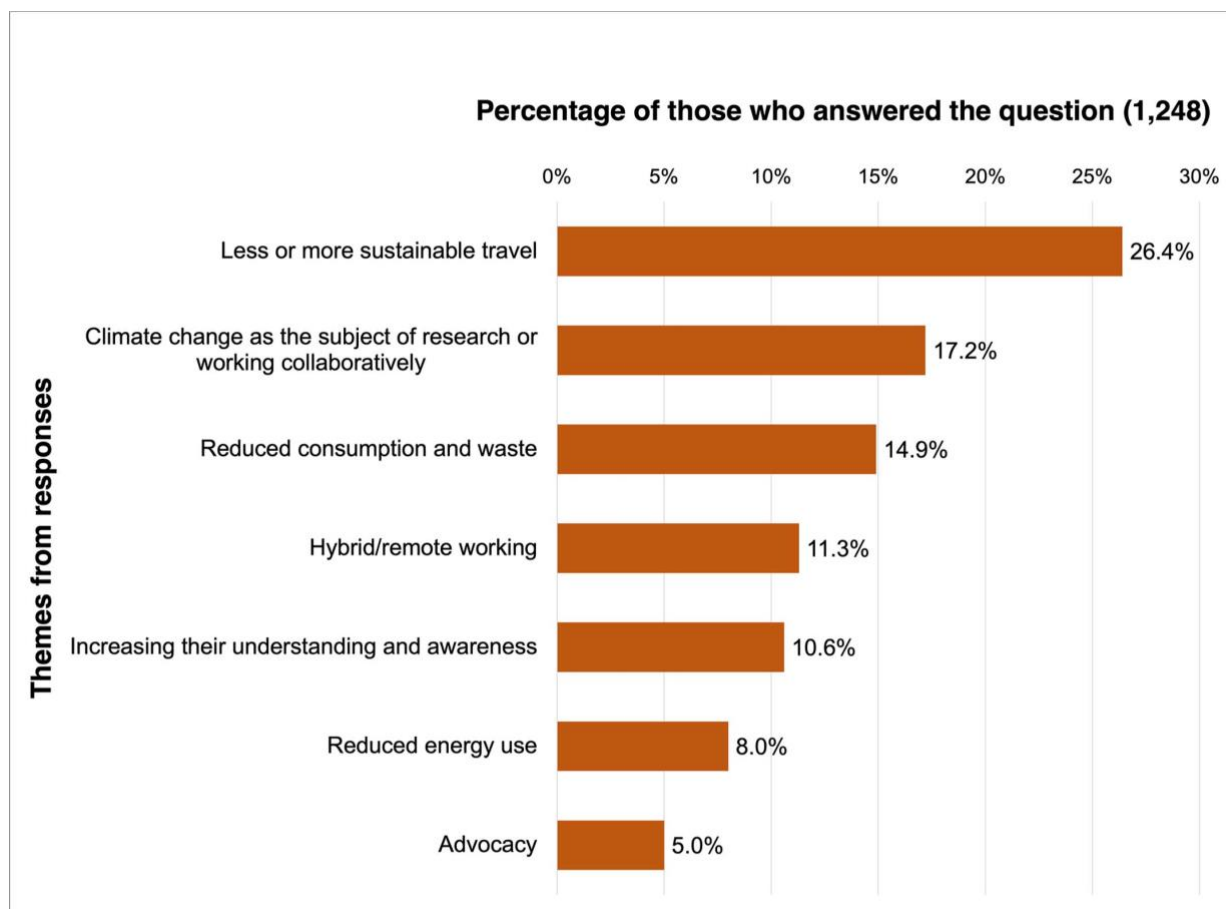
“I am a bit worried by the idea that reducing travel is necessarily a good thing if it’s not combined with other activities to address colonial research practices. During covid I noticed a tendency for researchers in high income countries to use researchers in other places as data collectors. In the long term I think there needs to be more funding and support for PIs [Principal Investigators] and research projects conceptualised from within low and middle income countries (and potentially less travel through that channel).”

- Early career (social sciences)

Researchers’ engagement with climate change

When asked a similar question about how *researchers themselves* could better address climate change into their research practices (rather than what their *university* could do), there were 1,248 responses to the open text box question. The following percentages are in relation to those who answered the question, not the total number of survey participants.

Figure 6. Content analysis: As an individual, what actions do you think could take to better incorporate climate change into your research practices?



Content analysis (Figure 6) showed that 13.3% said they are already taking some actions, though 8.7% are unsure and 8.4% think there is not anything they could do or that it is out of their control. Reflecting responses to how universities could better incorporate climate action into their research practices, the most common theme was less travel (including internationally) or more sustainable travel (26.4%). This is reflected in one of the quotes below where a researcher chose not to fly for a potential project, leading to them not being awarded the funding to do the work. After travel, the most common themes were addressing climate change as the subject of their research or working collaboratively on the topic (17.2%) through to advocacy (5%), with themes at smaller percentages not included in the Figure.

Chapter 6: Survey: results

“I was shortlisted on a big project but as the PI [Principal Investigator] I refused a long haul flight to present it [...] Needless to say I did not get it. But [at] least I stuck to my principles.”

- Mid career (physical sciences, engineering & mathematics)

“It would need an unbiased pair of eyes over my practices to educate me further [about how to reduce the climate impact of my research].”

- Senior/professor (social sciences)

“Some of my research is in nursing and mental health, and when I talked about climate change and nursing I was laughed at. But actually, nursing and climate change there is a lot that we should be exploring!”

- Mid career (medicine, health & life sciences)

Points were also raised regarding research practices in specific subject areas, for example, laboratories and LEAF—a sustainable laboratories initiative developed by University College London (n.d.)—were commonly mentioned.

“We aren't trained how to do our computational work in as algorithmically efficient a manner as possible to avoid wasting energy. I do big simulations, which consume a lot of energy, producing a lot of waste heat in the servers, and the only pressure on me to avoid wasting energy is self-imposed.”

- Early career (physical sciences, engineering & mathematics)

“Some laboratories are “green” labs, but those efforts come from the individual researchers themselves.”

- Early career (medicine, health & life sciences)

Action by researchers

The results show that almost all (95.5%) researchers want to do more on climate change within their university. 80.5% want to do a great deal or a moderate amount more within their university, with a much smaller amount (15%) saying they only want to

Chapter 6: Survey: results

do a little bit more. 4.5% said they do not want to do anything more on climate change within their university. From those responses, the most common reason for not wanting to do more is because they think it will not make a difference (1%), followed by having other priorities at work (0.7%). Some are climate sceptics (0.5%) or think that it was not their expertise (0.5%). 0.4% think that other issues were important, it is irrelevant to their work, not their responsibility or they are already doing all they can.

Compared to researchers who want to do more on climate change within their university generally (95.5%), a lower percentage say that they want to address climate change through their *role* in the university (77.3%). However, only 7.9% say that they do not want to do so. Despite the results showing that researchers want to act, lack of knowledge appears to be a barrier, with almost half (48.5%) saying that they do not know how to address climate change within their role at their university. Nevertheless, 38.7% think that they do know how to address climate change within their role.

Most (70.2%) also think that their subject area is relevant for addressing climate change, with 24% thinking that it is highly relevant. A slightly lower percentage (67.3%) think that their role as a researcher is relevant for addressing climate change. However, almost a quarter (22.8%) think that their subject area or their role as a researcher (23.5%) is irrelevant.

Additionally, almost all (95.8%) researchers say that their own views about climate change affect their practices, choices and activities at work. For most researchers (50.6%), this affects them a moderate amount, 24.5% a great deal, and 20.7% only a little. Only 4.2% of researchers say that their views about climate change do not affect them at work.

Just under half (44.3%) think that in their role as a researcher, their work has or could have a positive impact in addressing climate change, and 29.1% are unsure. More than a quarter (26.6%) think this would not be the case. Researchers who think they have or could have a positive impact, or were unsure, were asked how they thought they could use their role to positively address climate change, ranking a list of options from 1

Chapter 6: Survey: results

(highest impact) to 10 (lowest impact). The results show that teaching others, professional practice and research and scholarship were the most highly ranked and therefore perceived to be the most impactful (see Table 11).

Table 11. Friedman test results (Q14).

Q14 How do you think you could use your role to positively address climate change? Please rank the following items, with 1 being the highest impact and 10 being the lowest impact.	Mean Rank
Teaching others (directly teaching about climate change)	4.44
Professional practice (applying sustainability principles to your work)	4.66
Research and scholarship (directly researching about climate change)	4.83
Application of knowledge/innovation (practical implications of your research beyond your institution)	4.98
Community engagement (working with people or organisations outside of the university)	5.01
Personal action (using knowledge gained in your role to inform your personal actions)	5.20
Campus sustainability (engaging in university climate change processes)	5.27
Awareness raising with the public	5.37
Campaigning and mobilisation	6.67
Secondment opportunities	8.58

There are no significant differences between these top three ranked items. Aside from campaigning and mobilisation, and secondment opportunities, the items were clustered closely together. This shows that there was quite a lot of variation regarding where researchers ranked the activities on the 1–10 scale, averaging somewhere in the middle. There are significant differences between the bottom two items (campaigning and mobilisation, secondment opportunities) and all other items, including each other, showing that these are viewed as the least impactful.

Worry

Chapter 6: Survey: results

The results also showed high levels of concern about climate change, with almost all (94.8%) researchers saying that they are extremely (35.1%), very (38.5%) or somewhat (21.2%) worried about climate change. Only a small percentage say that they are not very worried (3.9%) or not at all worried (1.3%).

“The institutional inertia (in the institution of academia, not in my institution particularly) is such that we can't change direction and it worries me a huge amount, but I feel powerless to fix it.”

- Mid career (medicine, health & life sciences)

Understanding of peers

The survey also explored researchers' perceptions of their peers. This revealed a lot of uncertainty - 29% of researchers neither agreed nor disagreed that addressing climate change is a priority for other researchers in their university. However, 43.4% think that it is a priority for other researchers, with 27.5% who think it is not.

A very high percentage of researchers are also unsure about how other researchers in their university perceive climate change with regards to their roles. 44.6% neither agree nor disagree about whether other researchers know how to address climate change in their roles, and 48.4% neither agree nor disagree about whether other researchers are reluctant to address climate change in their roles. However, 41.7% felt that others do not know how to address climate change in their roles (compared to only 13.7% who think they do). Only 18.2% think that other researchers are reluctant to address climate change in their roles, compared to 33.4% who think they are not.

“Many of my colleagues see climate change as a peripheral issue - that's something the 'climate researchers' do - as if it won't affect them. This is disturbing and at times very demotivating and can make me feel quite angry and hopeless.”

- Mid career (medicine, health & life sciences)

Chapter 6: Survey: results

“I [...] have no sense of what my colleagues in other departments are doing about climate change.”

- Mid career (arts & humanities)

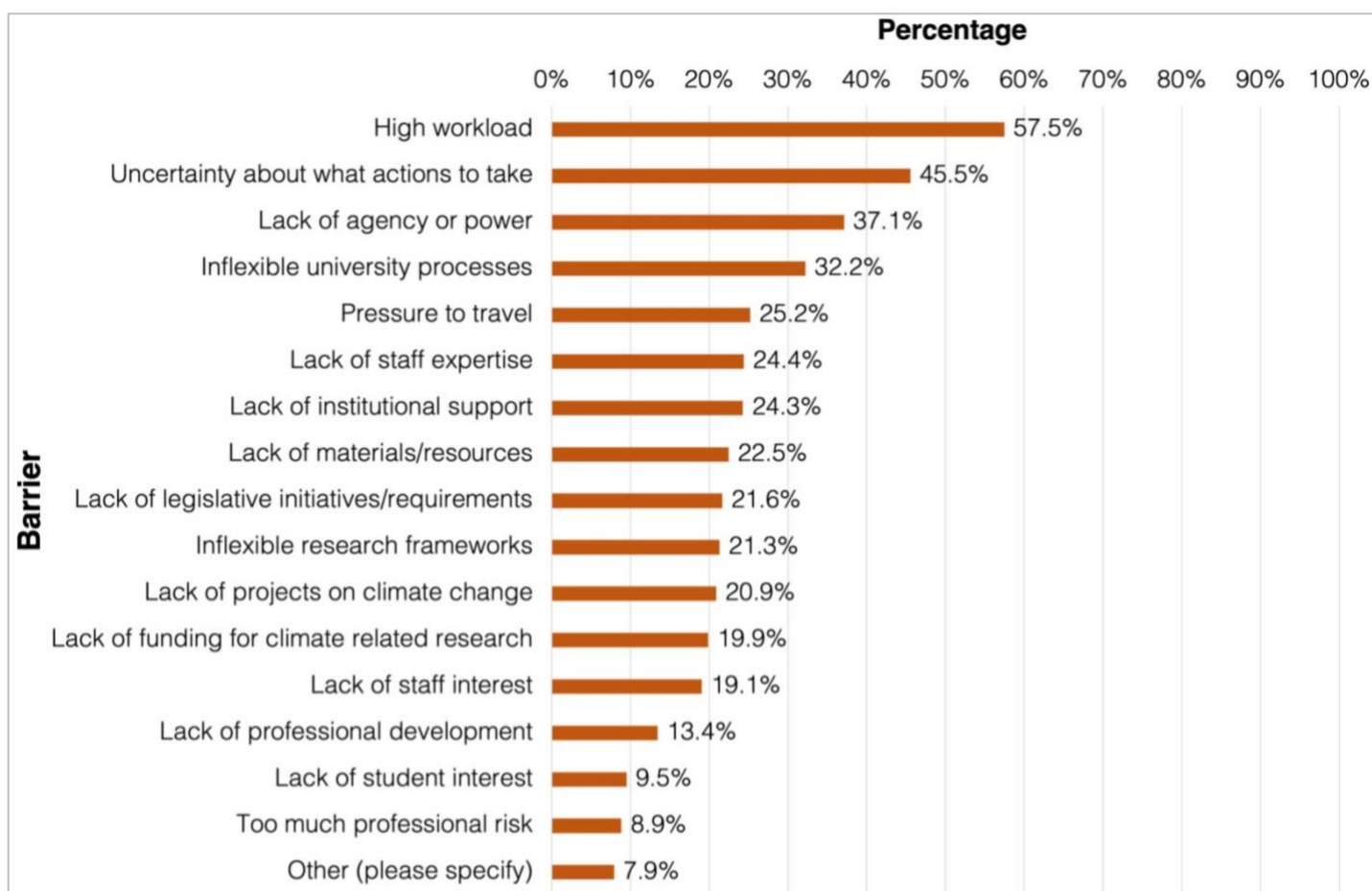
Nevertheless, there is a very high level of peer support (91.7%) for climate advocacy by other researchers. When asked to what extent they think it is appropriate for researchers to advocate for university action on climate change, the majority (54.3%) think that it is very appropriate, 37.4% moderately appropriate, and 6.6% only a little.

Barriers

Researchers say that they face multiple barriers to doing more on climate change within their universities (see Figure 7). When asked if they faced any barriers, 47% said yes and 36.7% were not sure, compared to only 16.2% who said no. Those who answered yes or not sure were then asked to complete the question identifying the types of barriers: 1,443 out of 1,853 people responded to this question and percentages below are of the whole sample. All the options listed were selected by these researchers as barriers.

Figure 7. Percentage of researchers who say that these items are barriers to them doing more on climate change through their roles in their university (Q21).

Chapter 6: Survey: results



Note: Percentages total more than 100 as it was a multiple choice, multiple answer question.

High workload by far was the largest barrier, with more than half (57.5%) of researchers saying so. Comments also showed that this high workload and lack of time can even impact on less strenuous engagement, such as simply being aware of wider university action on climate change.

“For something to be a priority something else has to be dropped out as I am only human.”

– Senior/professor (arts and humanities)

“I don’t know much [about what the university is doing to address climate change], as I never have time to read central comms properly.”

- Early career (arts and humanities)

Chapter 6: Survey: results

Uncertainty about what actions to take is the second largest barrier for almost half (45.5%) of researchers, followed by lack of agency or power (37.1%) and inflexible university processes (32.2%). Some researchers mentioned being obstructed by people more powerful than them, despite being in a position to create meaningful change.

“I know there is a “sustainability” vision. I’m not clear on how what I do, fits with that.”

- Senior/professor (physical sciences, engineering & mathematics)

“There are great pockets of work but the VC and team are obstructing meaningful engagement. I am on the steering committee for climate action at my uni.”

- Mid career (social sciences)

“Many scientific consumables have to be purchased and we have little or no control over how green the production of these items is.”

– Senior/professor (medicine, health and life sciences)

However, others highlighted specific barriers due to their type of work contract or work situation – for example, 12 mentioned fixed-term contracts, remote working or broader job insecurity. Additionally, lack of funding (for low-carbon travel options or enacting broader changes) was noted as a barrier as well as funding processes themselves.

“I can’t risk rocking the boat or [my contract] won’t be renewed.”

– Early career (medicine, health and life sciences)

“Funding body requiring cheapest travel.”

– Early career (physical sciences, engineering and mathematics)

Wider societal issues were also highlighted such as the marketisation of universities, government policies (or lack of government action), and capitalism. Although numbers were relatively low as a proportion of responses, it is important to note that seven

Chapter 6: Survey: results

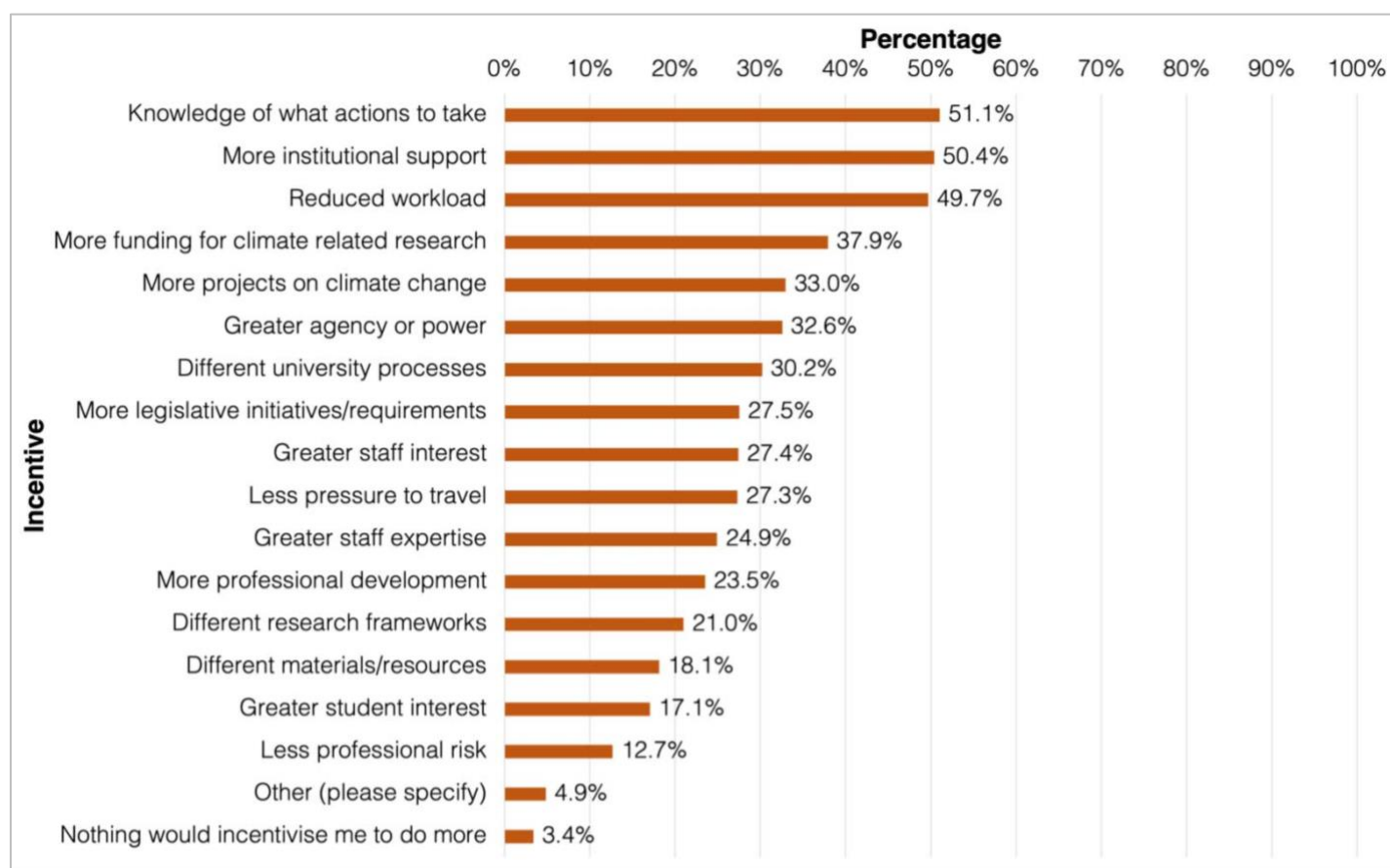
people highlighted personal issues as barriers including caring responsibilities, disabilities and health issues.

Enabling factors

The survey also explored what would enable researchers to do more on climate change through their roles at work (see Figure 8; the percentages total more than 100 as it was a multiple choice, multiple answer question). The greatest incentives for more than half of researchers to do more on climate change through their roles in the university are knowledge of what actions to take (51.1%), more institutional support (50.4%) and reduced workload (49.7%). However, all of the incentives listed were selected by researchers, with the majority of options being seen as incentives for 20% or more. Given the large number of survey responses, even the incentive with the smallest percentage ('less professional risk') was selected by more than 200 researchers, a clear indication that these are all areas that would incentivise a large number of researchers if they were enacted.

Figure 8. Percentage of researchers who say that these items would incentivise them to do more on climate change through their roles in their university (Q22).

Chapter 6: Survey: results



However, a small minority (3%) did state that nothing would incentivise them to do more.

“I am not sure what 'more' I could do. This is about changing a culture and that doesn't happen with lowly placed staff.”

– Mid career (social sciences)

Of the researchers who expanded on their answers in open text box responses (5%), there was an emphasis on having a supportive environment in several different ways, such as better working conditions, flexibility, training, collaboration, conversations, and genuine change from the university. Researchers felt that they needed:

“Collective momentum - more noise generally is needed to make people feel it worth adding to it.”

– Mid career (social sciences)

Chapter 6: Survey: results

“Money. I would change my car, or commute by train if funding permitted. I would buy local food if cost permitted. I would buy climate positive equipment if cost permitted.”

– Senior/professor (medicine, health and life sciences)

“More institutional support - with a huge caveat; it would need to be genuine.”

– Senior/professor (social sciences)

As the survey garnered responses from such a large number and wide range of different researchers, results also showed that the survey itself provided an incentive for some researchers to think about or act on the issues raised, with the realisation that they may have not engaged with this topic before.

“This has made me think a great deal about what I can do myself and working with others.”

- Early career (arts and humanities)

“This survey has made me reflect on how little I know about this. I read my university's research activity circulars, our mission statement, and having recently been in a leadership role have read a lot of its documentation in a lot of area. I can't recall this question being explicitly addressed, certainly never foregrounded, although that might be my oversight of course. We have never been directed to, for example, consider climate impact in our research planning or grant applications, or in activities we plan with students.”

- Senior/professor (arts and humanities)

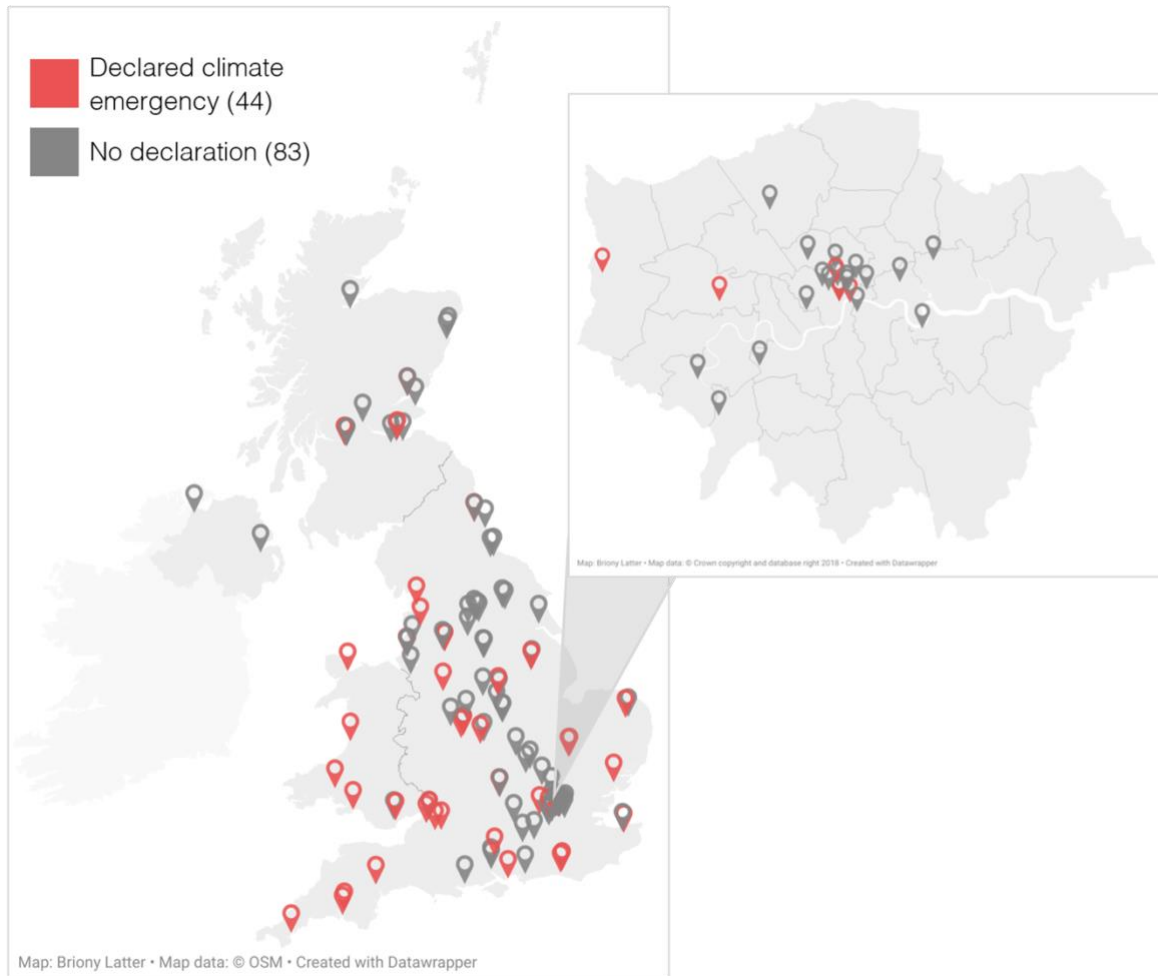
6.2.4 Professional differences between researchers

This section now moves on to identify how researchers with different professional characteristics (subject area, climate/non-climate researcher, career stage) may have responded differently to the survey questions. This allows for a deeper exploration of the results to draw out additional findings.

Chapter 6: Survey: results

The first area I explore relates to institutional factors, specifically, researchers' perceptions about universities' climate emergency declarations. To explore data related to this, I first had to identify which universities had declared climate emergencies. My previous data collection for the documentary analysis (Chapter 4) identified 37 universities across the UK that had declared climate emergencies within a year of the first one doing so. This was cross referenced with the universities that responded to the survey. All remaining universities that responded to the survey were checked to see whether they had declared a climate emergency or not. These were identified by searching for "climate emergency" on each university's website, checking the list of university sustainability commitments on the EAUC website (EAUC, n.d.c) and searching for "climate emergency" and the name on the university on Google. If a declaration was not found using these three search methods, it was listed as not having made a declaration. Of the universities that responded to the survey, 44 have declared climate emergencies, and 83 have not. This can be seen in Figure 9 (data points on the map are calculated from the latitude and longitude of each university, therefore the Open University is only counted once - in England).

Figure 9. Universities that have declared climate emergencies (which responded to the survey).



This data about the climate emergency declarations was used for the exploratory questions for the institutional factors.

Exploratory question 1: Depending on whether their institution has declared a climate emergency or not, will there be a difference in researchers' perceptions of:

- a) Whether they think their university is doing enough to address climate change in terms of its own impacts and emissions?
- b) Whether they receive enough information from their university about its own climate action?
- c) Whether they think addressing climate change is a priority for their university in terms of its own impacts and emissions?

Chapter 6: Survey: results

- d) The extent to which universities' climate emergency declarations are making a difference in addressing climate change?

The results of exploratory questions 1a-1d showed that none were significant. These non-significant results can be found in Appendix D7.

Individual factors: subject areas

The second area relates to individual factors. There are two broad questions that relate to individual factors around researchers' subject areas (including whether they research or teach on climate change) and researchers' career positions. These will be dealt with in turn below. The overall question I explore for this section about differences by researchers' subject area is as follows:

Depending on the subject area they work in, do researchers perceive the relationship between their role and climate change differently?

This specific climate change expertise will be dealt with first in the hypotheses below, before moving on to exploratory questions which also address the broader subject areas that researchers work in (for example, arts & humanities).

Hypothesis 1: Knowledge

- a) Compared to non-climate researchers, climate researchers perceive they know more about how to address climate change in their role.
- b) Compared to non-climate researchers, climate researchers perceive that other researchers know less about how to address climate change in their role.

Hypothesis 2: Subject area and role

- a) Compared to non-climate researchers, climate researchers think their *subject area* is more relevant for addressing climate change.
- b) Compared to non-climate researchers, climate researchers think their *role* is more relevant for addressing climate change.

Chapter 6: Survey: results

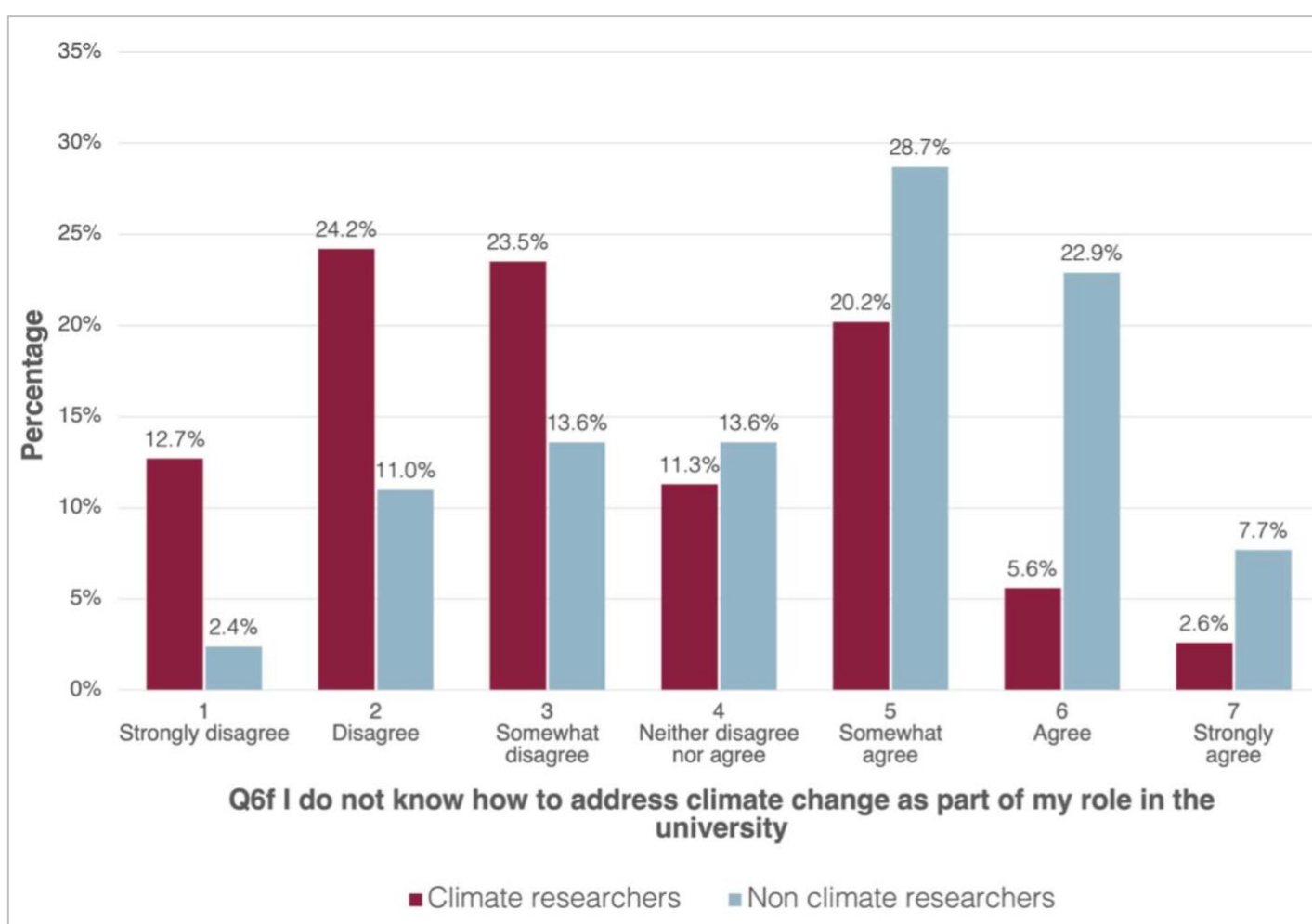
Hypothesis 3: Compared to non-climate researchers, climate researchers are more likely to think they can take positive climate action.

Hypothesis 4: Compared to non-climate researchers, climate researchers are more likely to have higher levels of worry about climate change.

Five hypotheses were significant, the results of which are described in turn below. The non-significant hypothesis (1b) can be found in Appendix D9.

Hypothesis 1a

Figure 10. Percentage of researchers (climate and non-climate) who say they do not know how to address climate change as part of their role in the university.

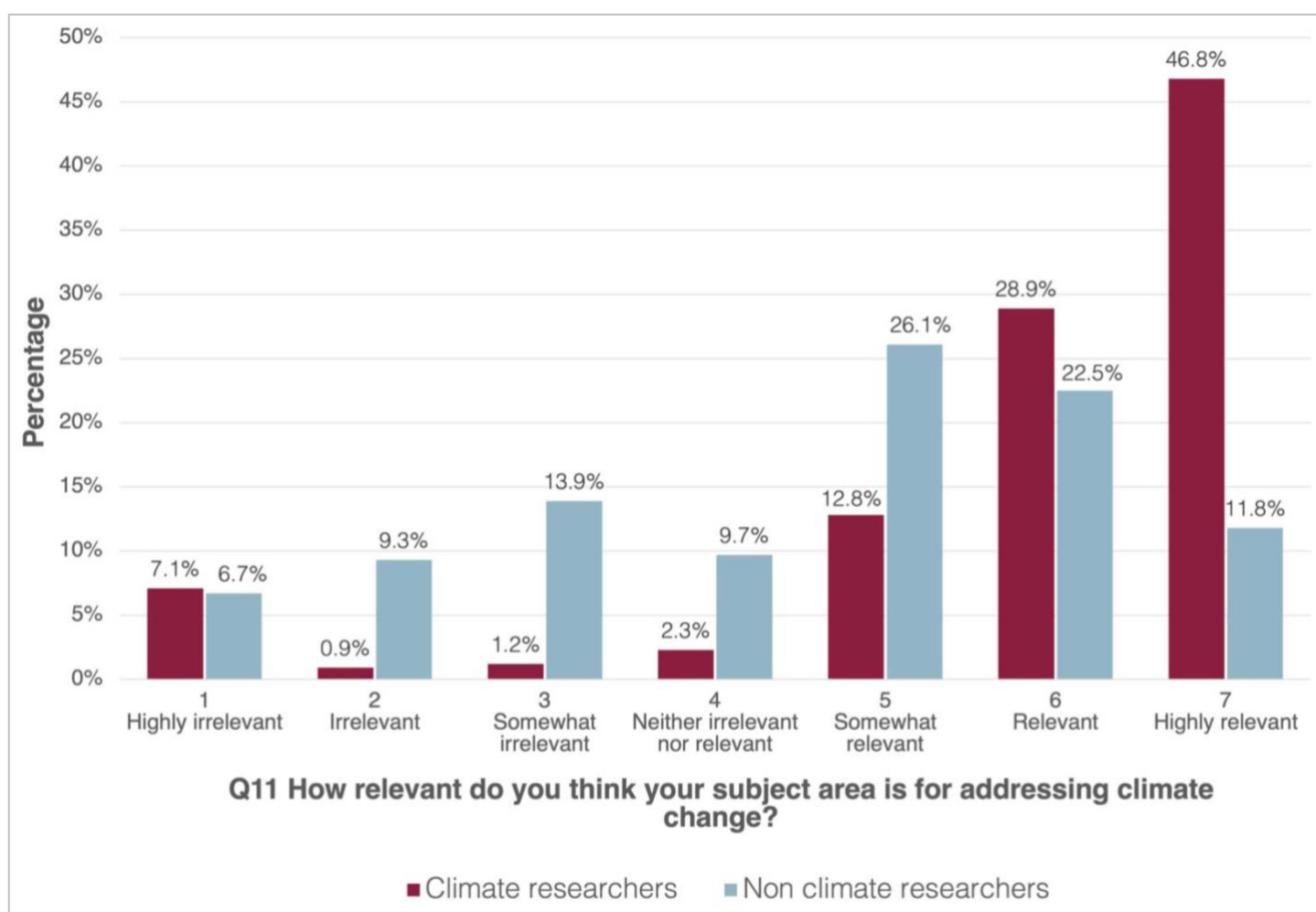


Chapter 6: Survey: results

Hypothesis 1a identifies whether climate researchers perceive they know more about how to address climate change through their role than non-climate researchers. The result was significant, $t(1851) = -16.508, p = <.001$. This shows that climate researchers ($N = 648, M = 3.29, SD = 1.583$) are *more likely* to think they know how to address climate change at work (60.4% agreement), compared to non-climate researchers ($N=1205, M = 4.55, SD = 1.547$) (27% agreement).

Hypothesis 2a

Figure 11. Percentage of researchers (climate and non-climate) who think their subject area is relevant for addressing climate change.



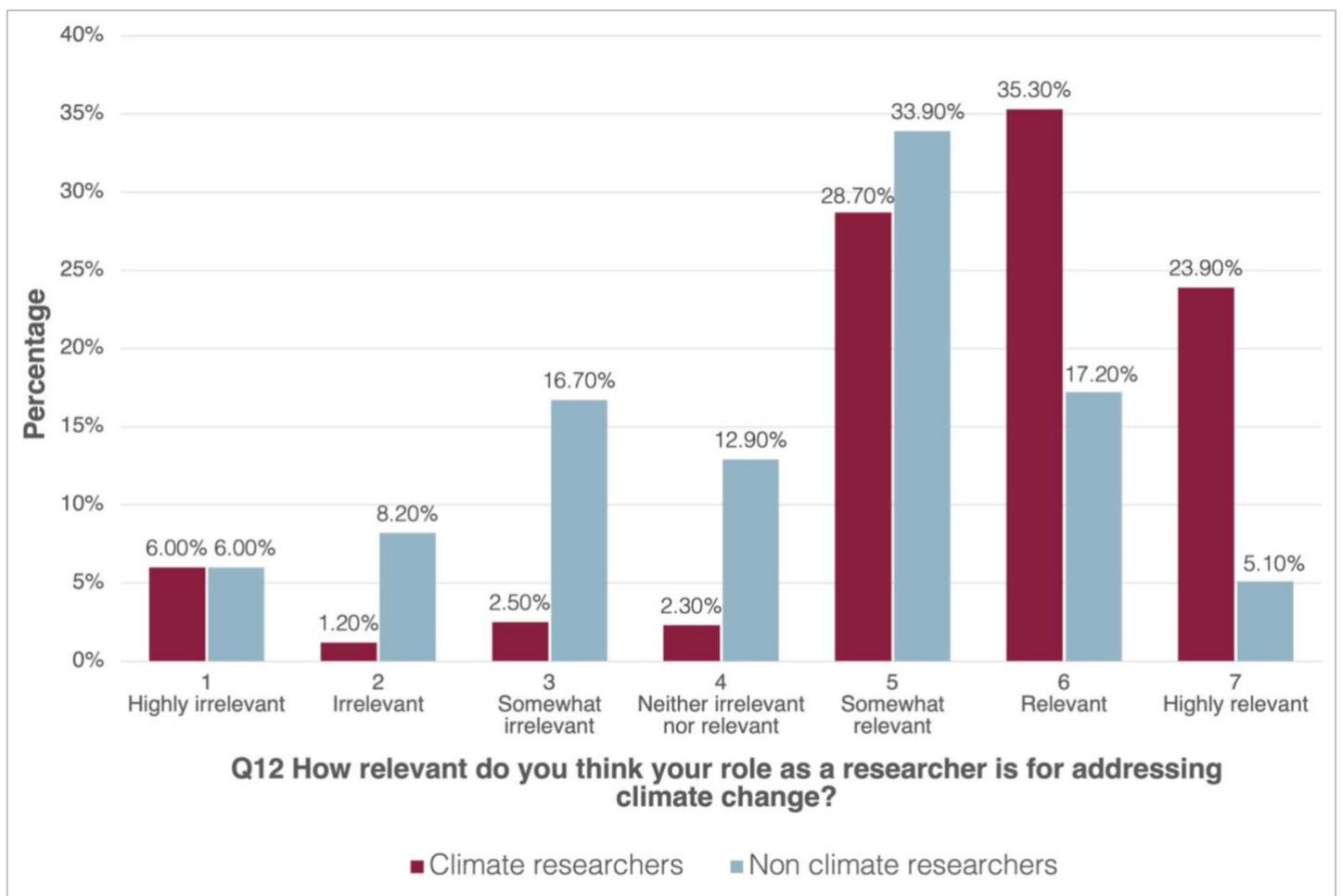
Hypothesis 2a identifies whether climate researchers, compared to non-climate researchers, think their *subject area* is more relevant for addressing climate change. The result was significant, $t(1393.641) = 16.202, p = <.001$. The second test confirmed this ($U = 199897.000, p = <.001$). This shows that climate researchers ($N = 648, M =$

Chapter 6: Survey: results

5.86, SD = 1.646) are *more likely* to think their subject area is more relevant for addressing climate change, compared to non-climate researchers (N = 1205, M = 4.54, SD = 1.747).

Hypothesis 2b

Figure 12. Percentage of researchers (climate and non-climate) who think their role is relevant for addressing climate change.



Hypothesis 2b identifies whether climate researchers, compared to non-climate researchers, think their *role* is more relevant for addressing climate change. The result for hypothesis 2b was significant, $t(1358.579) = 15.537, p < .001$. The second test confirmed this ($U = 211303.000, p < .001$). Climate researchers (N = 648, M = 5.48, SD = 1.509) are *more likely* to think their role as a researcher is more relevant for addressing climate change, compared to non-climate researchers (N = 1205, M = 4.33, SD = 1.555).

Hypothesis 3

Figure 13. Percentage of researchers (climate and non-climate) who think their work has or could have a positive climate impact.

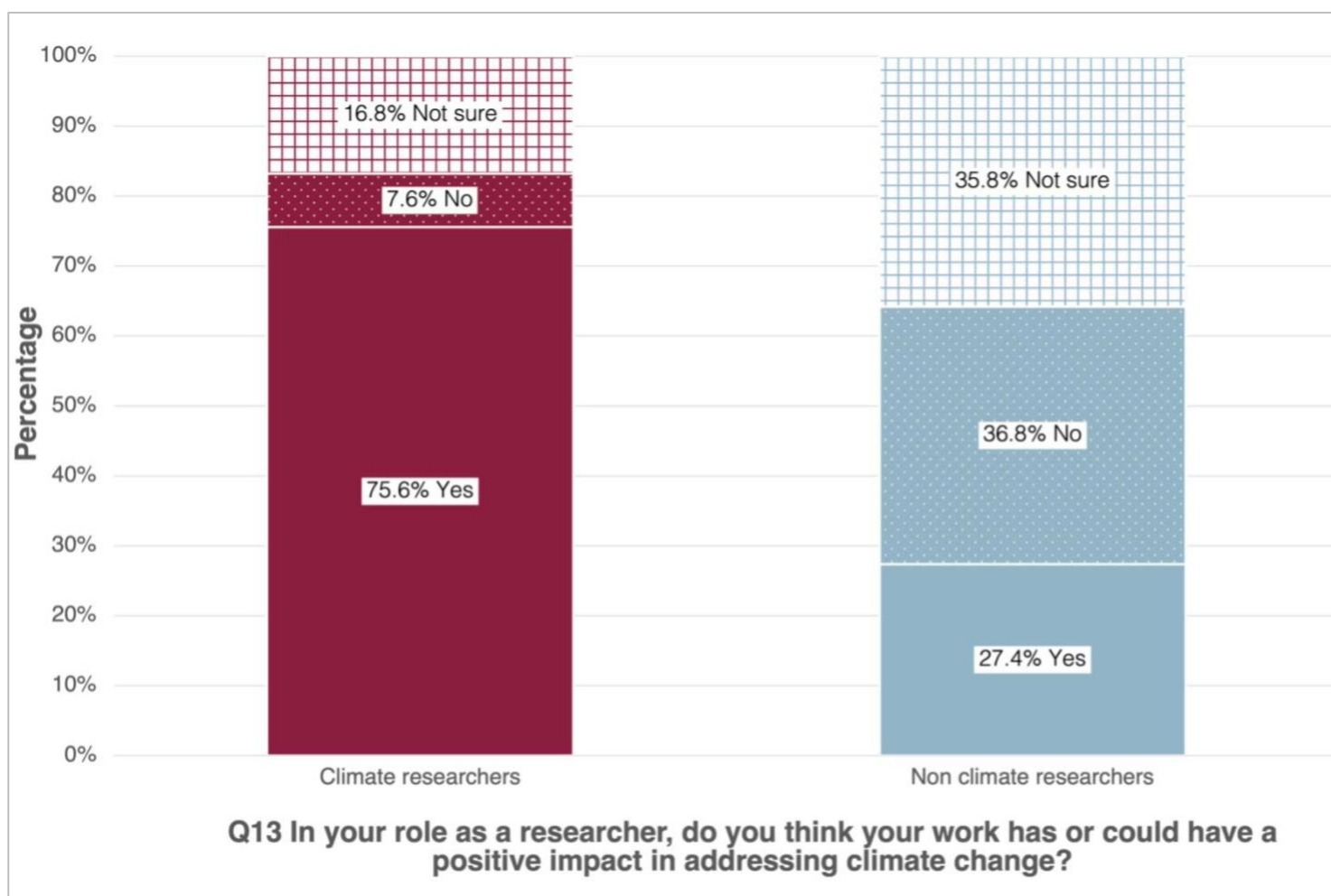
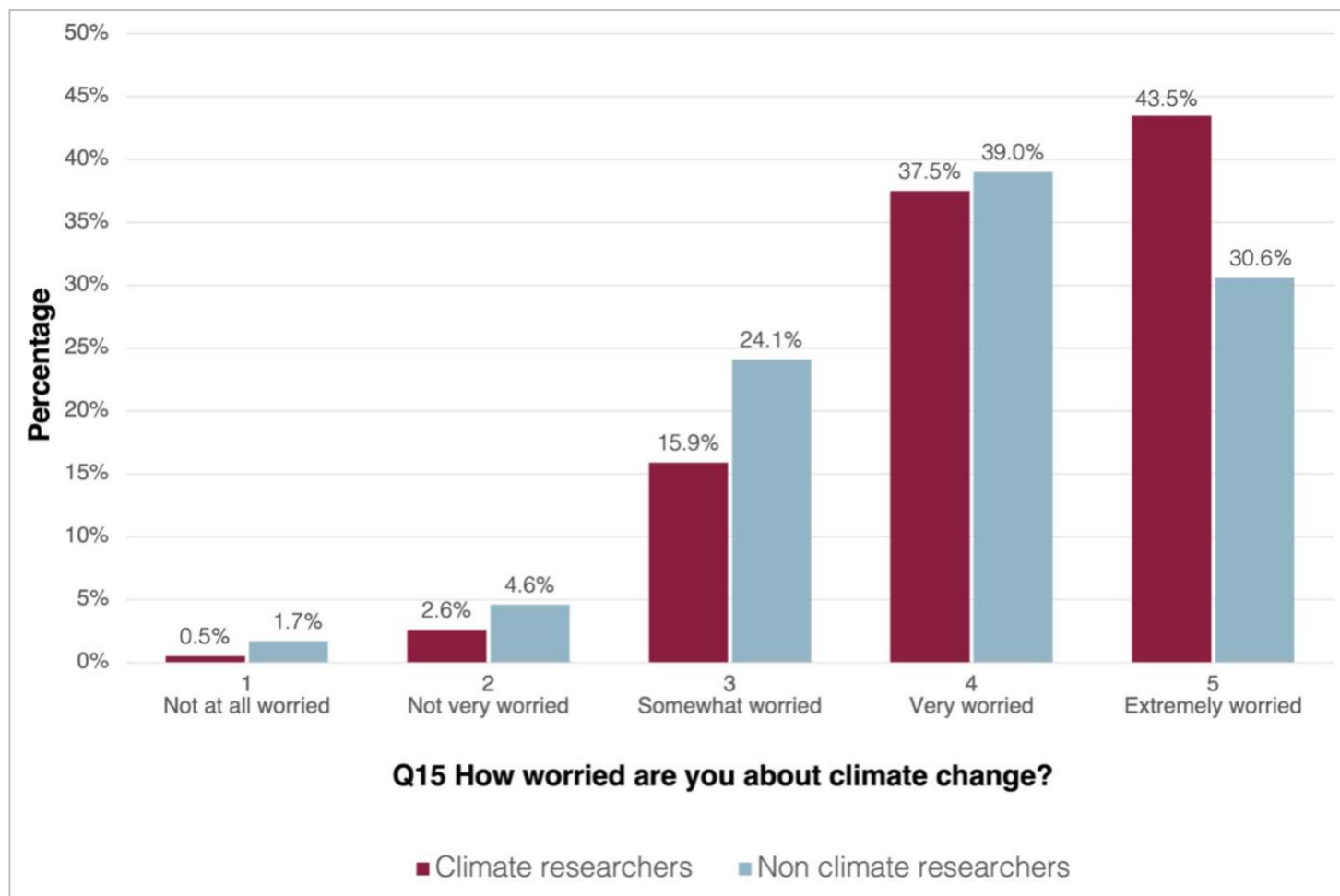


Figure 13 shows that a much higher percentage of climate change researchers who responded to the survey answered yes, compared to non-climate researchers.

Hypothesis 3 explores whether there is a statistically significant difference between climate and non-climate researchers regarding whether they think their work could have a positive impact in addressing climate change. The result was significant, $X^2(2, N = 1,853) = 409.256, p < .001$. The results showed statistically significant differences across all answers (yes/no/not sure) between the two groups. Therefore, climate researchers are *more likely* than non-climate researchers to think their work has or could have a positive impact in addressing climate change.

Hypothesis 4

Figure 14. Percentage of researchers (climate and non-climate) who are worried about climate change.



Hypothesis 4 identifies whether climate researchers are more worried about climate change than non-climate researchers. The result was significant, $t(1851) = 6.538$, $p = <.001$. Climate researchers ($N = 648$, $M = 4.21$, $SD = 0.835$) are *more likely* to be worried about climate change (96.9% worried) than non-climate researchers ($N = 1205$, $M = 3.92$, $SD = 0.939$) (93.7% worried).

Exploratory questions

There are also several exploratory questions related to subject area (for example, arts & humanities) as well as whether they are climate researchers or not.

Chapter 6: Survey: results

Exploratory question 2: Depending on the subject area they work in, will there be a difference in how relevant researchers think their subject area is for addressing climate change?

Exploratory question 3: Depending on the subject area they work in, will there be a difference in how appropriate they think it is for researchers to advocate for university action on climate change?

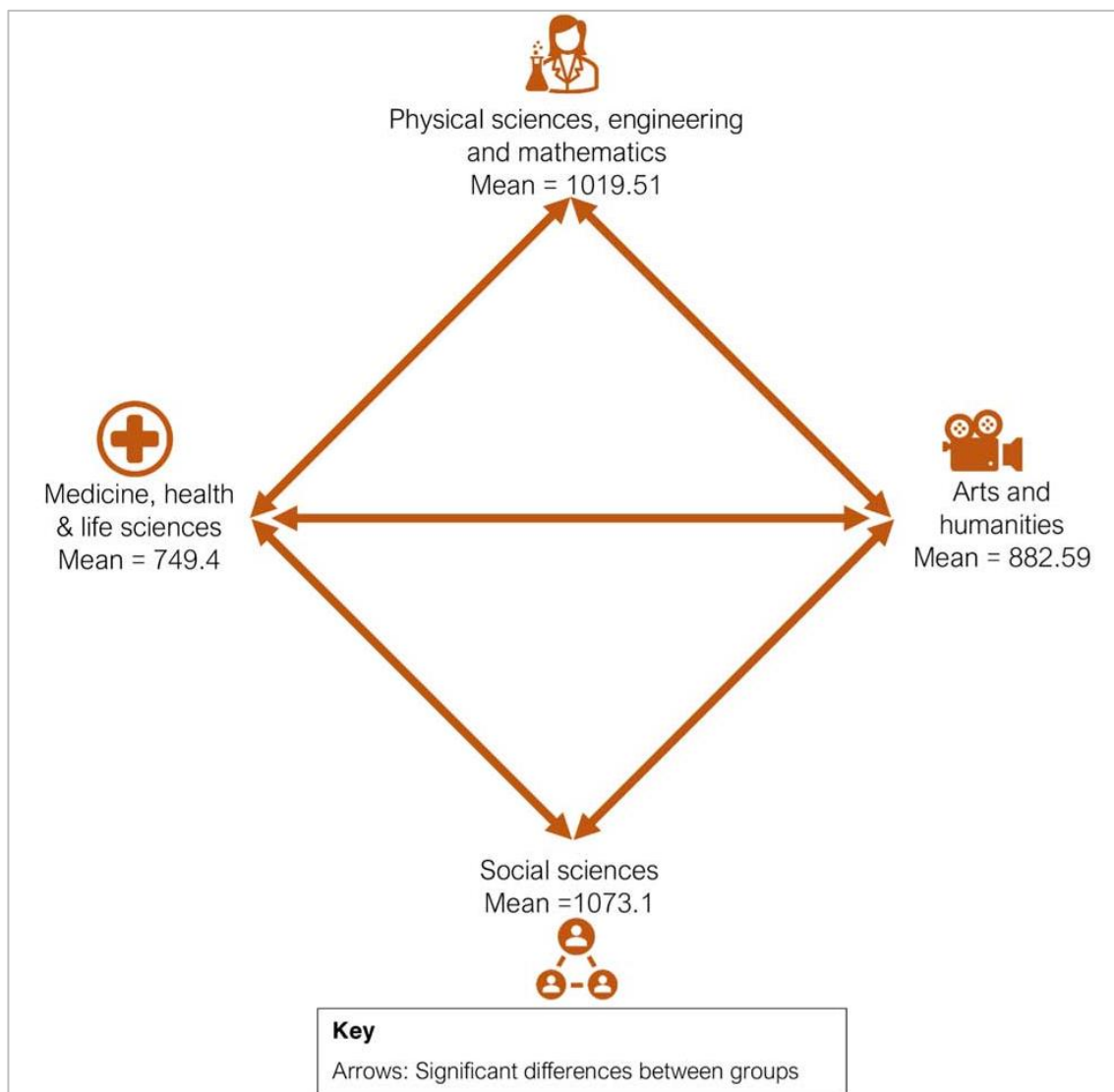
Exploratory question 4: Depending on whether they research/teach on climate change or not, will there be a difference in how appropriate they think it is for researchers to advocate for university action on climate change?

Exploratory question 5: Depending on whether they research/teach on climate change or not, will there be a difference in the amount or types of barriers researchers face?

All exploratory questions 2-5 had at least partial data that was significant, the results of which are described in turn below. The test statistics and non-significant results can be found in Appendix D13.

Exploratory question 2

Figure 15. Differences by subject area in how relevant they think their subject area is for addressing climate change.



Exploratory question 2 identifies whether there was a difference between the subject area that researchers work in and how relevant they think it is for addressing climate change. The different groups are medicine, health & life sciences (N = 599), physical sciences, engineering & mathematics (N = 360), social sciences (N = 592) and arts & humanities (N = 302). The result was statistically significant, $H(3) = 128.175$, $p < .001$. A table showing the Test Statistics is available in Appendix D11.

There were statistically significant differences between all groups apart from between physical sciences, engineering & mathematics and social sciences (see Figure 15). There was a mean rank score of 749.4 for medicine, health & life sciences, 1019.51 for

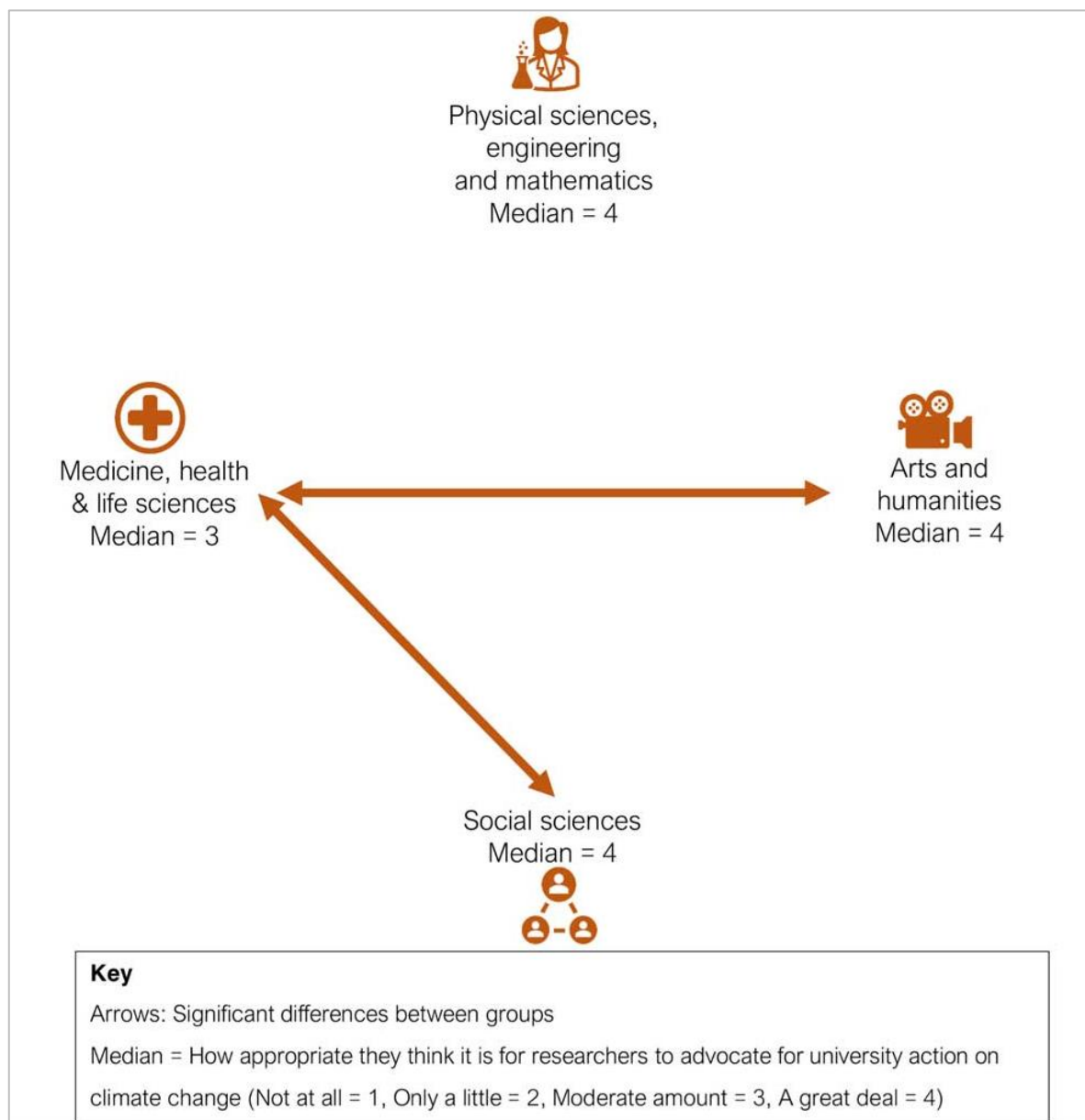
Chapter 6: Survey: results

physical sciences, engineering & mathematics, 1073.1 for social sciences and 882.59 for arts & humanities. Each cluster in Figure 15 shows the different subject areas of researchers and the mean rank scores. The results showed that:

- Medicine, health & life sciences researchers are *less likely* than researchers from other disciplines to think that their subject area is relevant for addressing climate change. 58.1% think it is relevant compared to 69.9% from arts & humanities, 74.2% from physical sciences, engineering & mathematics, and 80.1% from social sciences
- Physical sciences, engineering & mathematics researchers are *more likely* than medicine, health & life sciences researchers and arts & humanities researchers to think that their subject area is relevant for addressing climate change
- Social sciences researchers are *more likely* than medicine, health & life sciences researchers and arts & humanities researchers to think that their subject area is relevant for addressing climate change
- Arts & humanities researchers are *more likely* than medicine, health & life sciences researchers to think that their subject area is relevant for addressing climate change. However, they are *less likely* than physical sciences, engineering & mathematics researchers and social sciences researchers to think that their subject area is relevant for addressing climate change.

Exploratory question 3

Figure 16. Differences by subject area in how appropriate they think it is for researchers to advocate for university action on climate change.



Exploratory question 3 identifies whether there was a difference between subject areas and how appropriate they think it is for researchers to advocate for university action on climate change. The different groups for exploratory question 3 are medicine, health & life sciences (N = 598), physical sciences, engineering & mathematics (N = 359), social sciences (N = 591) and arts & humanities (N = 302). The result was statistically significant, $H(3) = 15.682^a$, $p = <.001$. A table showing the Test Statistics is available in Appendix D12.

Chapter 6: Survey: results

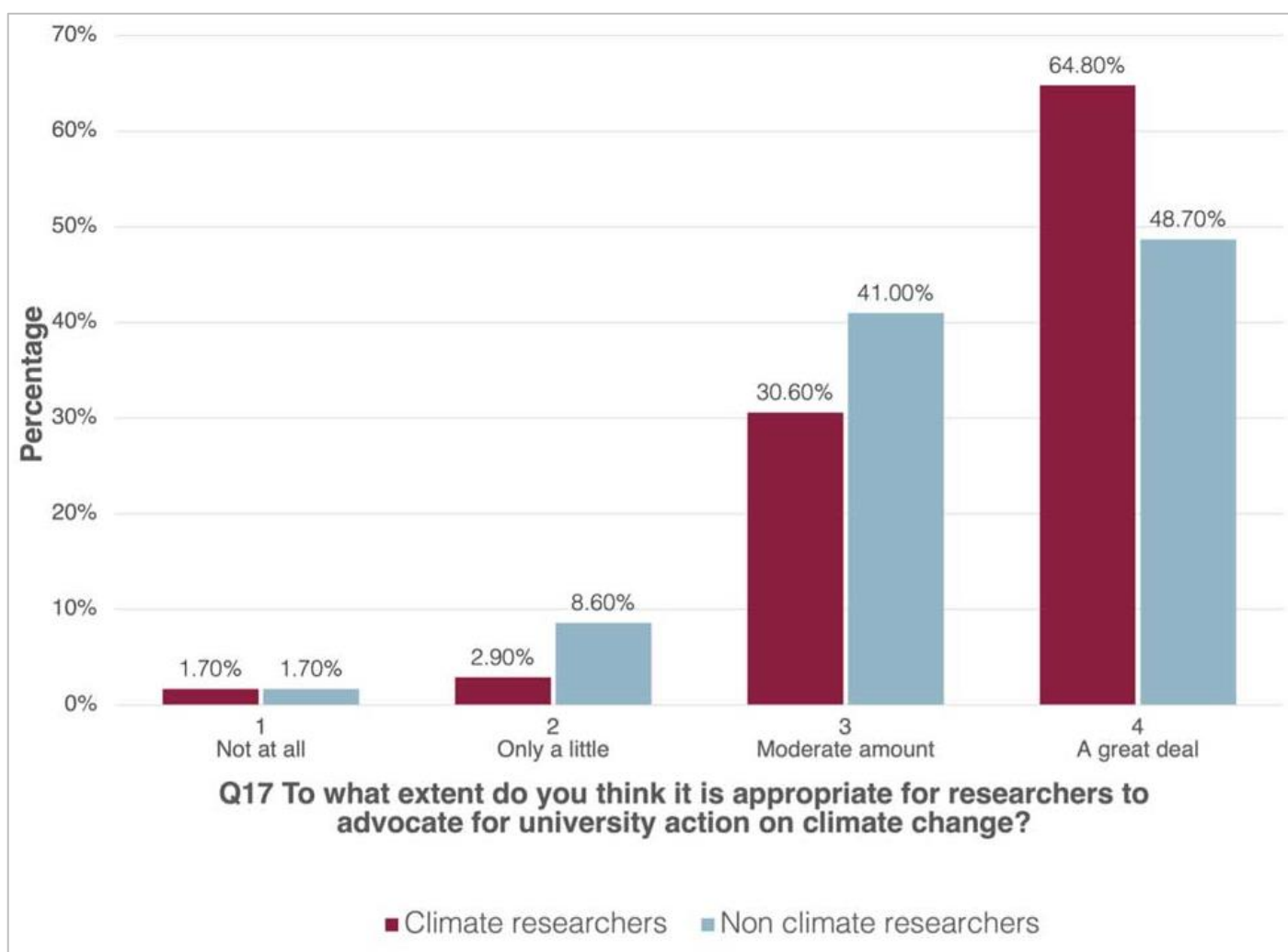
Each cluster in Figure 16 shows the different subject areas of researchers and the medians. The results show that there were statistically significant differences in the medians in only two instances:

- Between medicine, health & life sciences (3.00) and social sciences (4.00)
- Between medicine, health & life sciences (3.00) and arts & humanities (4.00)

This shows that researchers from social sciences and arts & humanities are *more likely* than medicine, health & life sciences researchers to think that it is appropriate for researchers to advocate for university action on climate change. 89.8% of medicine, health & life sciences researchers think it is appropriate compared to 92.7% from social sciences and 94% from arts & humanities. There are no statistically significant differences between any other groups.

Exploratory question 4

Figure 17. Percentage of researchers (climate and non-climate) who think that it is appropriate for researchers to advocate for university action on climate change.



Exploratory question 4 identifies whether there were differences in how climate and non-climate researchers perceive climate advocacy within universities. The result is significant and showed that the distribution was not the same across each group, $U = 322054.000000$, $p = <.001$. The mean ranks are statistically significantly higher for climate researchers (1029.50) than for non-climate researchers (869.43). This shows that climate researchers are *more likely* to think that it is appropriate for researchers to advocate (95.4%) for university action on climate change, compared to non-climate researchers (89.7%).

Exploratory question 5

Figure 18. Types of barriers faced by researchers (climate and non-climate) in doing more on climate change through their role at work.

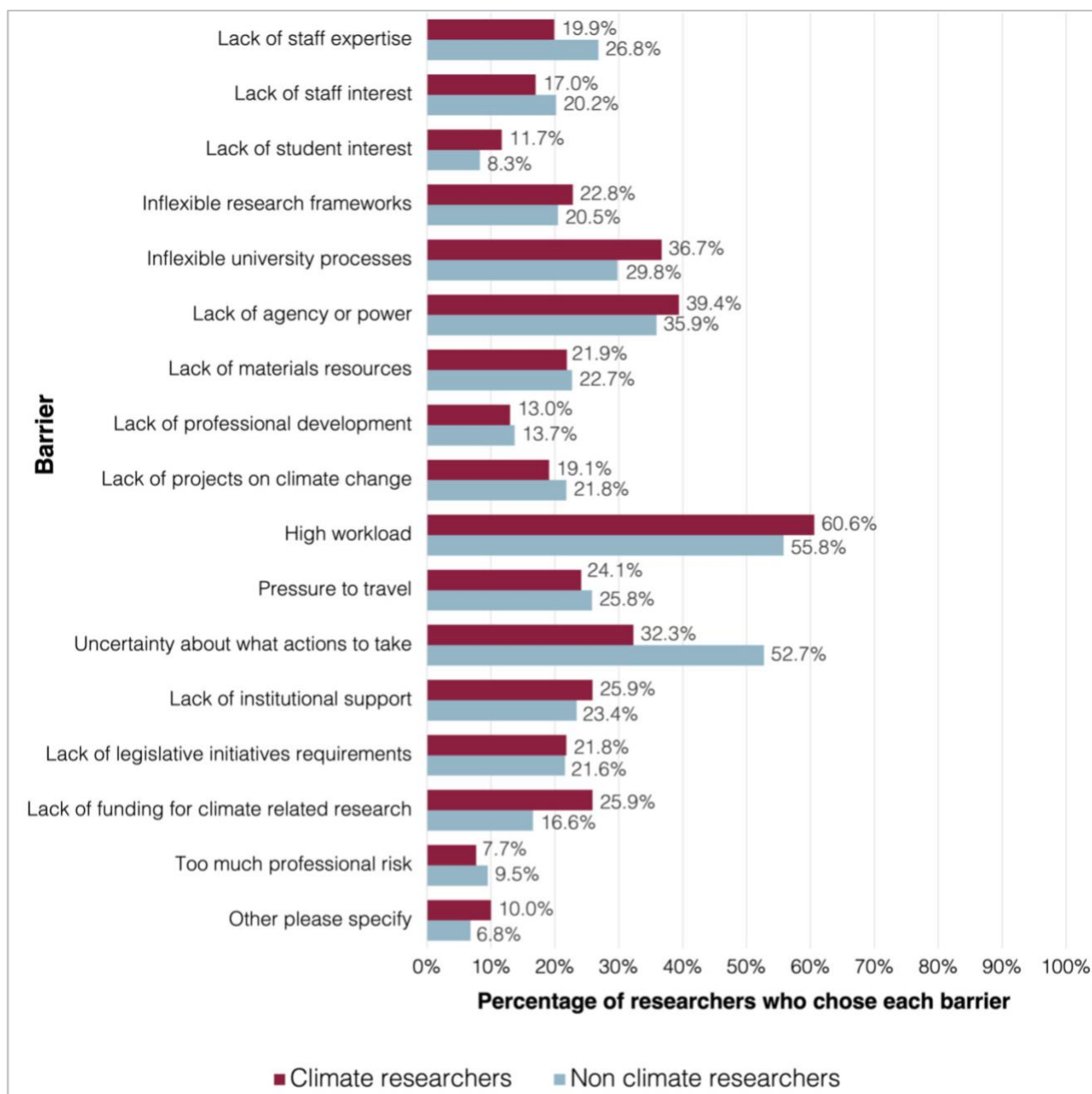


Figure 18 shows the different types of barriers faced by climate and non-climate researchers in doing more on climate change through their role at work. The results showed that differences between the groups were significant across four barriers:

- Uncertainty about what actions to take: $X^2 (1, N = 1,853) = 71.013, p = <.001$
- Lack of funding for climate related research: $X^2 (1, N = 1,853) = 23.040, p = <.001$

Chapter 6: Survey: results

- Lack of staff expertise: $X^2 (1, N = 1,853) = 10.871, p = <.001$
- Inflexible university processes: $X^2 (1, N = 1,853) = 9.283, p = .002$

The significant results show that:

- Non-climate researchers (52.7%) are *more likely* than climate researchers (32.3%) to say that uncertainty about what actions to take is a barrier
- Climate researchers (25.9%) are *more likely* than non-climate researchers (16.6%) to say that lack of funding for climate related research is a barrier
- Non-climate researchers (26.8%) are *more likely* than climate researchers (19.9%) to say that lack of staff expertise is a barrier
- Climate researchers (36.7%) are *more likely* than non-climate researchers (29.8%) to say that inflexible university processes are a barrier.

There were also no statistically significant results when exploring whether there was a difference between climate researchers (N = 648) and non-climate researchers (N = 1,205), and the number of barriers they face in doing more on climate change through their role at work. The non-significant results for the number and types of barriers can be found in Appendix 13.

Individual factors: career position

The second broad question to explore in the survey data relates to researchers' career position. As noted previously, there are no specific hypotheses that can be drawn from previous literature or my other research studies, but there are questions which could elicit useful information about the relationship between career position and other factors. The question I explore for this section about differences by researchers' career position is as follows:

Depending on their current position, do researchers perceive the relationship between their role (or the role of others) and climate change differently?

Exploratory question 6: Depending on their current position, will there be a difference in:

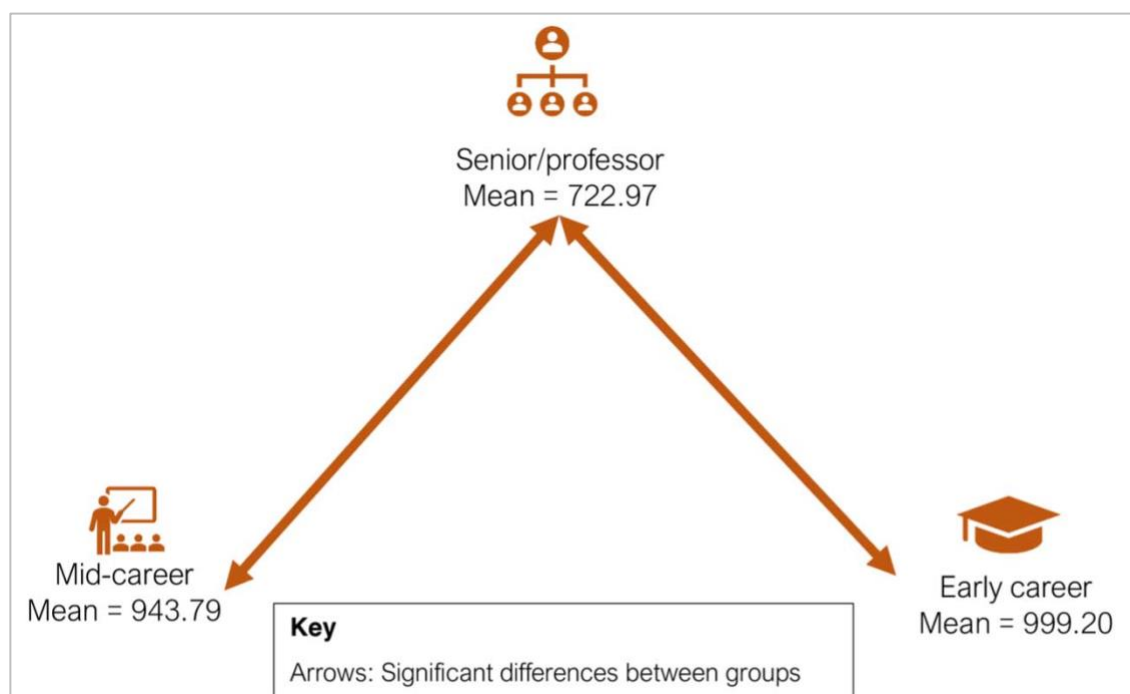
Chapter 6: Survey: results

- a) The extent to which researchers want to address climate change through their role in the university?
- b) The extent to which researchers know how to address climate change through their role?
- c) Who researchers think should be responsible for climate change in universities?
- d) How appropriate they think it is for researchers to advocate for university action on climate change?
- e) Whether researchers face differences in the amount and type of barriers to doing more on climate change through their role?

The results of three exploratory questions were significant, the results of which are described in turn below. Results of the non-significant exploratory questions (6a and 6d) can be found in Appendices D15 and D18.

Exploratory question 6b

Figure 19. Differences by current position in whether researchers think they know how to address climate change as part of their role in their university.



Exploratory question 6b identifies whether there was a difference between researchers' current position and whether they think they know how to address climate change as

Chapter 6: Survey: results

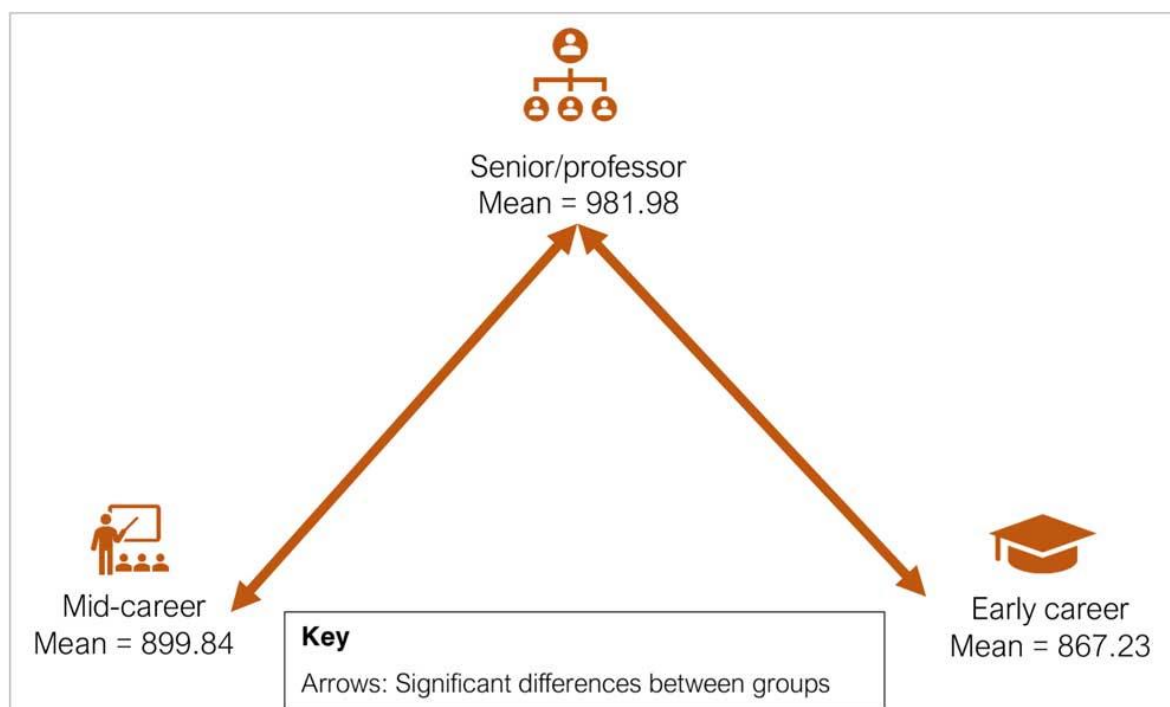
part of their role in their university. The groups are early career (N = 800), mid-career (N = 530) and senior/professor (N = 487). Participants who chose 'other' are not included. The result was statistically significant, $H(2) = 90.176$, $p = <.001$. A table showing the Test Statistics is available in Appendix D16.

The results show that there were statistically significant differences between those who class themselves as senior/professor and the other two groups (early career and mid-career; see Figure 19). There was a mean rank score of 722.97 for senior/professor, 943.79 for mid-career, and 999.20 for early career. Senior/professors (52.4%) are *more likely* than early career (32.9%) and mid-career researchers (35.5%) to think they know how to address climate change at work. Each cluster in Figure 19 shows the different subject areas of researchers and the mean rank scores.

Exploratory question 6c

Exploratory question 6c identifies whether there was a difference between researchers' current position and the level of responsibility they think different people should have for addressing climate change in universities. The groups are early career (N = 799), mid-career (N = 530) and senior/professor (N = 487). Participants who chose 'other' are not included. The result was statistically significant in two instances, each of which are described in turn below. A table showing the Test Statistics is available in Appendix D17.

Figure 20. Differences by current position in the level of responsibility that researchers think senior academics/researchers should have for addressing climate change in universities.

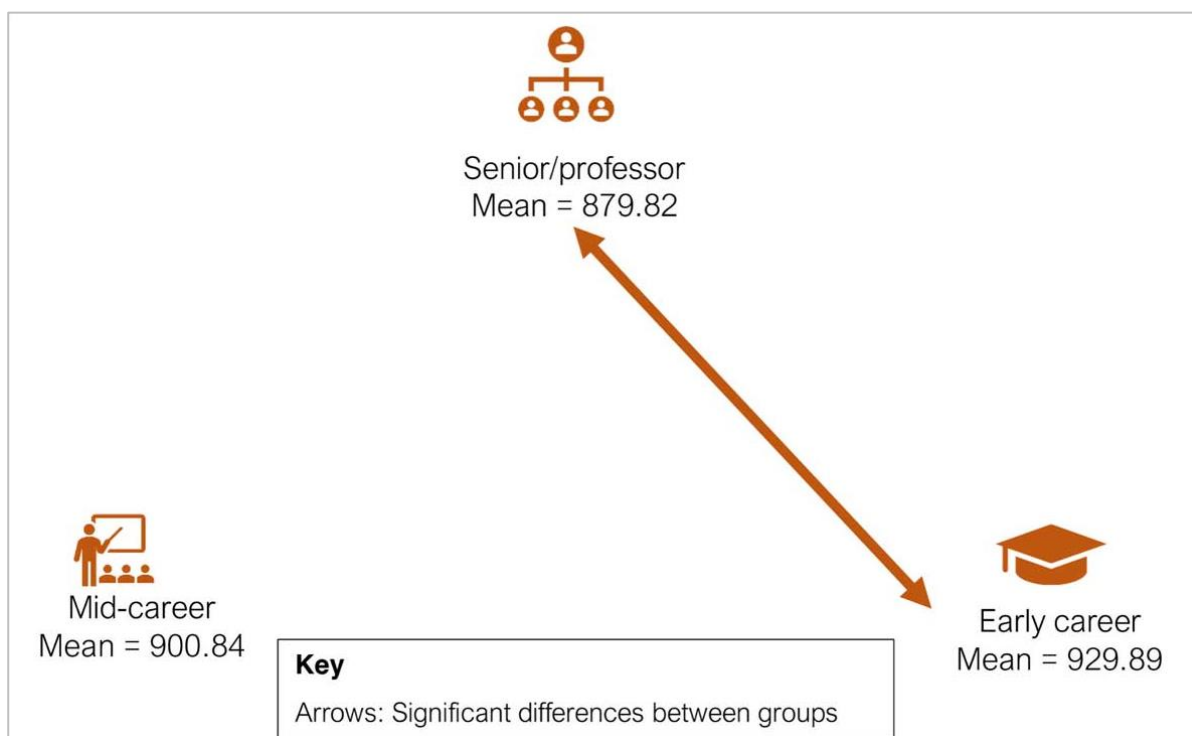


The result was significant when testing for the level of responsibility that senior academics and researchers should have, $H(2) = 18.296, p = <.001$.

The results show that there were statistically significant differences between those who class themselves as senior/professor and the other two groups (early career and mid-career; see Figure 20). There was a mean rank score of 981.98 for senior/professor, 899.84 for mid-career, and 867.23 for early career. Each cluster in Figure 20 shows the different subject areas of researchers and the mean rank scores. Senior/professors (57.6%) are *more likely* than mid (49.2%) or early career researchers (46.4%) to think that senior academics and researchers have a high responsibility for addressing climate change in universities. There are no statistically significant differences between any other groups.

Figure 21. Differences by current position in the level of responsibility that researchers think research institutions themselves (e.g. universities and colleges) should have.

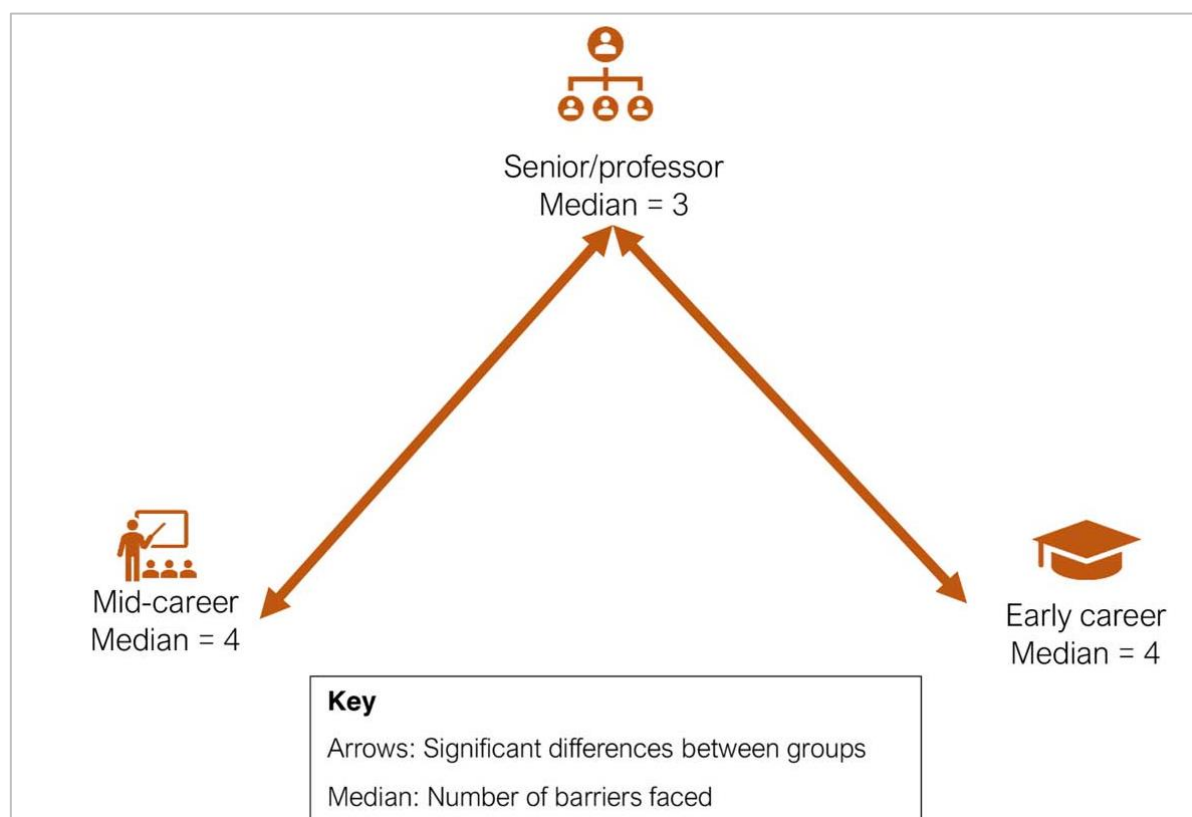
Chapter 6: Survey: results



The result was significant when testing for the level of responsibility that research institutions themselves (e.g. universities and colleges should have, $H(2) = 6.613$, $p = <.037$). The results show that there was a statistically significant difference between those who class themselves as senior/professor and early career (see Figure 21). There was a mean rank score of 879.82 for senior/professor, 900.84 for mid-career, and 929.89 for early career. Each cluster in Figure 21 shows the different subject areas of researchers and the mean rank scores. Early career researchers (84.7%) are *more likely* than senior/professors (79.2%) to think that research institutions themselves have a high responsibility for addressing climate change in universities. There are no statistically significant differences between any other groups.

Exploratory question 6e

Figure 22. Differences by current position in the number of barriers faced by researchers (in doing more on climate change through their role at work).



Exploratory question 6e identifies whether there was a difference between researchers' current position and the number of barriers they face in doing more on climate change through their role at work. The different groups are early career (group 1, N = 800), mid-career (group 2, N = 530) and senior/professor (group 3, M = 487). The result was statistically significant, $H(2) = 37.253, p = <.001$. A table showing the Test Statistics is available in Appendix D19. Each cluster in Figure 22 shows the different subject areas of researchers and the median. The results show that there were statistically significant differences in the medians in two instances:

- Between early career (median = 4) and senior career/professor (median = 3)
- Between mid-career (median = 4) and senior career/professor (median = 3)

This shows that early and mid-career researchers perceive that they face a *greater number of barriers* in doing more on climate change through their role at work than

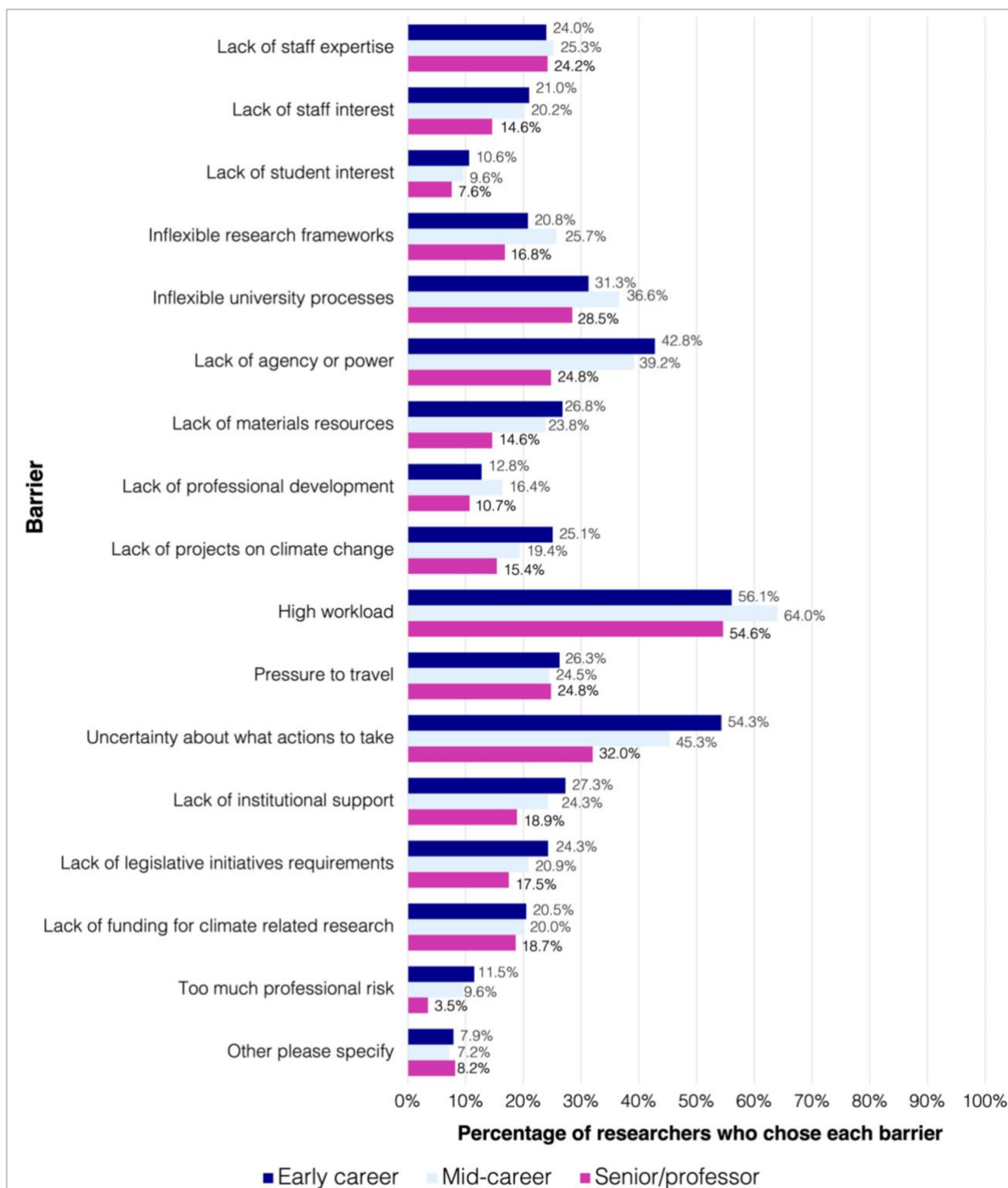
Chapter 6: Survey: results

senior researchers/professors. There are no statistically significant differences between early and mid-career researchers.

Figure 23 shows the different types of barriers faced by researchers (by current position) in doing more on climate change through their role at work.

Figure 23. Types of barriers faced by researchers (by current position) in doing more on climate change through their role at work.

Chapter 6: Survey: results



The results showed that differences between the groups were significant across eight barriers:

- Lack of agency or power: $X^2 (2, N = 1,443) = 43.386, p = <.001$
- Lack of materials/resources: $X^2 (2, N = 1,443) = 26.189, p = <.001$

Chapter 6: Survey: results

- Lack of projects on climate change: $X^2 (2, N = 1,443) = 18.262, p = <.001$
- Uncertainty about what actions to take: $X^2 (2, N = 1,443) = 60.266, p = <.001$
- Too much professional risk: $X^2 (2, N = 1,443) = 24.804, p = <.001$
- Inflexible research frameworks: $X^2 (2, N = 1,443) = 11.979, p = .003$
- Lack of institutional support: $X^2 (2, N = 1,443) = 11.556, p = .003$
- High workload: $X^2 (2, N = 1,443) = 11.173, p = .004$

The results (see Table 12) showed statistically significant differences for all barriers, but only between some groups. The non-significant results for the types of barriers can be found in Appendix D20.

Table 12. Z-test results for exploratory question 6e.

Barrier	Number of researchers who chose each barrier and percentage within entire survey sample		
	Early career	Mid-career	Senior or professor
Lack of agency or power	342 _a 42.8%	208 _a 39.2%	121 _b 24.8%
Lack of materials/resources	214 _a 26.8%	126 _a 23.8%	71 _b 14.6%
Lack of projects on climate change	201 _a 25.1%	103 _b 19.4%	75 _b 15.4%
Uncertainty about what actions to take	434 _a 54.3%	240 _b 45.3%	156 _c 32%
Too much professional risk	92 _a 11.5%	51 _a 9.6%	17 _b 3.5%
Inflexible research frameworks	166 _{a,b} 20.8%	136 _b 25.7%	82 _a 16.8%
Lack of institutional support	218 _a 27.3%	129 _{a,b} 24.3%	92 _b 18.9%
High workload	449 _a 56.1%	339 _b 64%	266 _a 54.6%

Chapter 6: Survey: results

SPSS data note: Each subscript letter denotes a subset of Q5 *How would you describe your current position?* categories whose column proportions do not differ significantly from each other at the .05 level.

- **Lack of agency or power:** Early (42.8%) and mid-career researchers (39.2%) are *more likely* than senior career researchers/professors (24.8%) to say that lack of agency or power is a barrier. There were no statistically significant differences between early- and mid-career researchers.
- **Lack of materials/resources:** Early (26.8%) and mid-career researchers (23.8%) are *more likely* than senior career researchers/professors (14.6%) to say that lack of materials/resources is a barrier. There were no statistically significant differences between early- and mid-career researchers.
- **Lack of projects on climate change:** Early career researchers (25.1%) are *more likely* than mid- (19.4%) and senior career researchers/professors (15.4%) to say that a lack of projects on climate change is a barrier. There were no statistically significant differences between mid- and senior career researchers/professors.
- **Uncertainty about what actions to take:** Early career researchers (54.3%) are *more likely* than mid- (45.3%) and senior career researchers/professors (32%) to say that uncertainty about what actions to take is a barrier. Mid-career researchers are *more likely* than senior career researchers/professors but *less likely* than early career researchers to say that uncertainty about what actions to take is a barrier.
- **Too much professional risk:** Early (11.5%) and mid-career researchers (9.6%) are *more likely* than senior career researchers/professors (3.5%) to say that too much professional risk is a barrier. There were no statistically significant differences between early- and mid-career researchers.
- **Inflexible research frameworks:** Mid-career researchers (25.7%) are *more likely* than senior career researchers/professors (16.8%) to say that inflexible research frameworks are a barrier. There were no statistically significant differences between early career researchers and mid- or senior career researchers/professors.

Chapter 6: Survey: results

- **Lack of institutional support:** Early career researchers (27.3%) are *more likely* than senior career researchers/professors (18.9%) to say that a lack of institutional support is a barrier. There were no statistically significant differences between mid-career researchers and early or senior career researchers/professors.
- **High workload:** Mid-career researchers (64%) are *more likely* than early (56%) and senior career researchers/professors (54.6%) to say that high workload is a barrier. There were no statistically significant differences between early career researchers and senior career researchers/professors.

6.3 Next steps

This chapter has outlined the methodology and results of the final phase of research – a UK-wide survey of university researchers. The results show that while most researchers have some knowledge of actions being taken by their universities and feel that universities' public declarations of a climate emergency are making a difference, almost half think not enough is being done. They feel that responsibility for university climate action sits across government, universities and research councils, but almost all researchers are also personally worried about climate change and want to do more themselves to address it.

For the most part, researchers also strongly support climate advocacy by those engaged in research. Yet high workload, uncertainty about what actions to take, perceived lack of agency or power, inflexible university processes and pressure to travel are just some of the many barriers they face in taking action. Additionally, the survey showed multiple differences between researchers who work in climate change and those who do not, relating to levels of knowledge and relevance of their work. There were also differences between the career positions of researchers with regards to the number and types of barriers they say they face in taking climate action.

Chapter 7 will now bring together the results from the interviews and survey—both phases of research which fall under Research Question 2—in a joint discussion.

Chapter 7

Interviews and survey: joint discussion

Contents

7.1 Chapter overview	224
7.2 Joint discussion	224
7.2.1 Views on universities.....	224
7.2.2 Researchers' engagement with climate change	227
7.2.3 Professional differences between researchers	237
7.3 Next steps.....	239

7.1 Chapter overview

This chapter brings together the results of a series of interviews (Chapter 5) and a UK-wide survey of researchers (Chapter 6) in a joint discussion. Both phases of research have explored Research Question 2: How does university and research culture shape the way that academic researchers engage with climate change?

The UK-wide survey built on the interviews with the aim of exploring how researchers in universities perceive and engage with climate change. The results offer important new insights into researchers' perceptions of the climate crisis across numerous measures as they explore data that has not previously been collected. Given that the survey specifically builds on the interview findings and therefore the content is very similar, the discussion below has been organised into sections mirroring the survey results.

7.2 Joint discussion

7.2.1 Views on universities

The survey results show that researchers think governments, research councils and universities themselves have considerable responsibility to act to address climate change within universities. Given that almost all interview participants felt universities have a responsibility to act on climate change, it is unsurprising that this was reflected in the survey results. The high perceived responsibility for government and policymakers is also similar to surveys of the UK public, who feel that government are particularly responsible for addressing climate change generally (Department for Business, Energy & Industrial Strategy, 2021). This suggests that researchers' views at least somewhat reflect the public in this regard and feel that action needs to come from within the sector as well as through external measures.

In one of the interviews with a sector expert, they stated that universities across the UK think they have a significant responsibility to act on climate change, showing that at least at a broad level, researchers' and institutions views on responsibility align. At the

Chapter 7: Interviews and survey: joint discussion

same time, the results show that there is appetite for action across multiple levels in universities, with “everyone” being seen as responsible in the interviews as well as in some survey responses, including senior people in the institution, middle management and those who can act at an individual level or from the bottom up.

Yet, the survey results show that many researchers think universities are not doing enough, despite their perceptions that climate change is seen as a priority by their institutions. This may reflect what O’Neill and Sinden (2021, p.37) call “a cognitive-practice gap [...] whereby radical research undertaken within universities is absent in the climate actions they operationalise”. However, given the broad range of researchers that the survey engaged with in terms of breadth of disciplines, career stages and geographic spread, this is likely to also simply reflect the cognitive-practice gap between researchers’ concerns about climate change, regardless of the type of research they undertake, and their university’s action. This finding also reflects existing research with university staff involved in sustainability (mainly lecturers, professors and administrative staff, with a small number of researchers) across 51 countries which found that a majority thought their university sees climate change as important, yet less than a third feel their plans for tackling it are ‘well developed’ or properly implemented in teaching and research (Leal Filho *et al.*, 2019).

The interviews found that researchers had some level of knowledge about their university’s climate action. Both the breadth and depth of this were reflected in the survey in that there were a wide range of initiatives mentioned but a big variation in the level of detail provided, which was often very surface level. The survey results showed that travel, climate change as a research topic and policies, plans or strategies were the top three most common areas that researchers knew about. It is not clear why some areas were more commonly known about than others, though it could be due to having closer connections to their research roles (for example if they know of colleagues or research centres working on climate change, or if policies have a direct impact on them) or perhaps are more visible and better communicated about. It should also be noted that while some researchers said they knew little about what their university is doing on climate change, many then went on to list several initiatives, even if they were

Chapter 7: Interviews and survey: joint discussion

vague or did not provide detailed information. This highlighted the value of having an open text box question because it allowed participants to offer explanations in their own words rather than simply having multiple choice options, in this case providing different data than would otherwise have been collected.

Interviews with sustainability staff found that they wanted to have greater communication about climate change within the university to raise awareness and action but faced a lack of time and resources. The survey indicated that while some climate communication was getting through to researchers via emails and newsletters for example, others felt there was a lack of publicity or information about university climate action. Researchers were fairly evenly split on whether they felt they receive enough information from their university about what it is doing to address climate change (though there was a much starker difference when asked specifically about low-carbon research practices - 66.2% do not think they receive enough information compared to 16.9% who do). While these particular results were not segmented by career stage, other research at a university in Spain found that PhD researchers had the most knowledge about their university's climate policies, information provision and mobility compared to other types of students, academic staff and administrative staff (Ferrari *et al.*, 2023). The authors indicate that this could be due to PhD researchers having closer communication with the university (*ibid*). With high workload the biggest barrier to researchers' climate engagement as well as comments from researchers about how it can be challenging to find time to read communications from the university, this shows that there are barriers on both sides – regarding being able to distribute content in the first place but also engaging with it.

Questions related to the climate emergency declarations were included in both the interviews and survey. The interviews found some scepticism about the declarations, though many were nonetheless pleased that the declarations had been made – both of which were reflected in the survey data to varying degrees. Additionally, the sustainability staff interviewed felt that declaring a climate emergency changed how their university approaches climate change, though the survey indicated that researchers may not feel the same, as while only 12.7% felt the declarations made no

Chapter 7: Interviews and survey: joint discussion

difference at all, more than half felt they are making “only a little” bit of difference. However, this is likely to relate, at least in part, to sustainability staff having much greater awareness of and interaction with internal action that has occurred since the declarations took place. Related to the previous findings regarding the need for better communication about university climate action, research at a university in Spain found that “detailed and accessible information” in the university’s climate emergency declaration predicted better staff and student perceptions of their university’s climate policies (Ferrari *et al.*, 2023, p.173), suggesting that improving communication in this way could be beneficial for engagement.

While the survey focused on climate change and did not explore what it means to be a researcher in more detail (a question that was asked in the interviews), many of the areas that were spoken about in the interviews came up in the survey and were therefore more easily recognised as being part of research culture and practices. This included publishing, funding, travel and long working hours. These are areas highlighted in the literature (for example, Tseng, Lee and Higham, 2023; Wellcome and Shift Learning, 2020) and that occurred both in the interviews and survey, also cutting across both research culture generally as well as climate action in some cases, therefore they are important to address. Sustainability staff in the interviews felt that university culture in general needs to change to address climate change and the survey showed that most researchers feel research culture needs to change to do so, demonstrating that even where universities are already taking climate action, there is clearly a need for this to be better embedded within the culture of the organisation. Existing research offers some suggestions with regards to changing organisational culture around climate education, such as including “climate change education and systems thinking objectives” in annual reviews and recruitment questions (Hindley, 2022, p.14).

7.2.2 Researchers’ engagement with climate change

The survey results showed that researchers are highly concerned about climate change and want to do more but need support in overcoming multiple barriers to doing so

Chapter 7: Interviews and survey: joint discussion

which cover their personal knowledge (uncertainty about what actions to take) as well as broader cultural and practical issues (high workload and lack of agency or power).

Worry

The level of climate concern was high in the interviews with researchers yet did not appear to translate into action in their job roles, therefore these were both areas that I wanted to explore further in the survey. In the interviews, some researchers described climate change as “terrifying” and “very important”, sentiments which were reflected in the survey data. When compared to researchers and academics in France and Colombia (Blanchard *et al.*, 2022; Espinosa *et al.*, 2023) and university students globally (Leal Filho *et al.*, 2023), the survey showed that UK researchers’ level of climate worry (94.8%) is similar. However, this is higher than the UK public (83%; Climate Engagement Partnership, 2021) and even more so when accounting only for those who are extremely or very worried: 73.6% in the survey compared to 46% for the general public (Demski, Steentjes and Poortinga, 2022).

Additionally, the disconnect between worry and action in researchers’ roles which came out of the interviews was confirmed in the survey results. Initially, the interviews suggested that researchers perhaps compartmentalise the two, in that they may see climate concerns and their job as separate given that few had taken action within their roles. Yet the survey suggested this was not the case for the potential divide between worry and action. Researchers want to act, both within and outside of their roles, even if they do not know how and face multiple barriers to doing so. This partly confirms the disconnect suggested by Thierry *et al.* (2023) - that researchers, as well as universities at an organisational level, recognise there is a climate crisis but do not act on it. The results are also in line with what is known as a ‘value-action’ gap around climate and sustainability issues, where there is a difference between a person’s values and how they behave (Flynn, Bellaby and Ricci, 2009).

Action by researchers

While the survey showed that almost half of researchers think their university is not doing enough to address climate change in its research activities, a similar number of

Chapter 7: Interviews and survey: joint discussion

researchers do not know how to take climate action in their roles. While the intersection between these two questions was not explored in the analysis, this mismatch could suggest that some researchers may not automatically see themselves as having a role in how the university addresses climate change in its research activities. It may be that if researchers better understood how they could take climate action in their research roles, their perceptions of university action within research would shift. Nevertheless, the interviews did show that most felt researchers felt they had a responsibility to act, a finding that was also reflected in the survey with a large majority who thought that both early and senior career researchers had a high or medium responsibility to act (mid-career researchers were not specifically asked about).

The survey also showed that researchers are uncertain about what their peers think about climate action. This issue is not confined to researchers – a survey of almost 130,000 people in 125 countries found that “individuals around the globe systematically underestimate the willingness of their fellow citizens to act” which is a barrier to further action (Andre, 2024, p.253). This suggests that better communication and connection between people is needed, a point which is highlighted by Capstick *et al.* (2021) who state that communicating about interpersonal influence and what actions have the most impact is important. Now that the survey has uncovered this lack of understanding of researchers’ peers, existing literature demonstrates how important it is to overcome this – for researchers to share their level of concern with others, that they want to take action and work together to find ways of doing so.

It is interesting that while researchers support advocacy by their peers, campaigning and mobilisation were personal actions that were seen to be one of the least impactful. It is unclear whether these are simply perceived as being less impactful without researchers having engaged in these actions or whether researchers have in fact tried to take these actions, but they have not had much impact. This could also suggest that advocacy and activism may be viewed differently by researchers. Despite the high peer support for advocacy, it is unknown to what extent there would be support if this tips into activism, particularly given its low ranking in the positive climate actions researchers could take in their roles (compared to other actions such as teaching

Chapter 7: Interviews and survey: joint discussion

others, applying sustainability principles to their work and climate-related research). This split between advocacy and activism is seen in research from Germany and the USA, with most citizens supportive of climate policy advocacy from scientists, but they felt that scientists supporting climate protests was not appropriate (Cologna *et al.*, 2021). However, if universities heed the call to better support academic advocacy and activism (Gardner *et al.*, 2021), it may be that this would enable researchers to feel they could have a greater impact. Additionally, this very high level of support for academic advocacy around climate change suggests that researchers' views may have changed in recent years, given that previous research findings suggested that there were mixed views on the issue (Boykoff and Oonk, 2018).

If researchers are to have a wider community impact, which is one of the pathways for climate action in universities (McCowan, 2020), then the extent to which researchers see this as being impactful needs to change given it did not rank as highly as actions that more clearly sit within their academic roles. Although almost all researchers want to do more on climate change within their university, less want to do so specifically through their role as a researcher. This could be linked to several of the barriers mentioned (for example, uncertainty about what actions to take) if they feel it is difficult or not possible to act within the confines of their role, or it could be because some feel that their subject area and role are not relevant for addressing climate change.

While only a small percentage, the survey showed that 4.5% of researchers say they do not want to do anything more on climate change within their university. Many (though not all) of these responses mapped onto the 'discourses of climate delay', groups of arguments which "justify inaction or inadequate efforts" to address climate change (Lamb *et al.*, 2020, p.1). Discourses that appeared in the survey responses related to 'surrender' (seeing change as impossible or that action is doomed to fail) and 'redirect responsibility' (stating that others should act first and absolving themselves from having responsibility; *ibid*). However, there were some responses that were simply climate denialism, calling climate change "pointless over-hyped scaremongering" and "a myth". While the survey did not explore researchers' personal beliefs about climate change, a global survey of university staff and students found that almost all respondents (96.6%)

Chapter 7: Interviews and survey: joint discussion

believed that climate change is happening now and is mainly human-caused (Leal Filho *et al.*, 2019), showing that the very small amount of respondents from the survey who deny or are sceptical about climate change is likely to be similar to elsewhere. While it is certainly concerning that some researchers hold these views and this should not be ignored, it is more important to focus on the very high number of researchers who say they do want to take further action.

In the interviews, most researchers said they had not noticed any changes in their jobs due to climate change and felt their research practices would not change due to any climate action their university was taking. Changes in people's jobs due to Covid-19 did however feature, though this was perhaps to be expected given when the interviews took place (winter 2020/21, in the midst of restrictions and lockdowns). Some people spoke about how a reduction in travel or changes to conferences or meetings were due to Covid-19 rather than climate considerations.

Regarding the lack of perceived changes in their jobs and research practices, it is interesting to reflect on these given the mentions of greenwashing and lip service in a small number of interviews and more extensively in the survey. Mocatta and White (2023) note that while greenwashing is sometimes pointed out by students, whether university actions are indeed greenwashing is sometimes difficult to disentangle. The perception of greenwashing could be a reason why most interview participants felt they had not and would not see any changes in their research practices. Yet given the extent to which climate change is becoming more prominent in the actions universities are taking (or at least their rhetoric) in recent years (People & Planet, 2023), it may also be possible that more detailed questioning would have identified changes that the participants did not initially think of. Additionally, participants did not give an indication of the time frame that they were thinking about and the question asked about their perception of change rather than attempting to measuring the change itself. This interview question was not taken forward into the survey as there were already many other topic areas to include and it did not appear to be a key area, though this was perhaps a missed opportunity to ask about it further.

Barriers

While some barriers to climate action were mentioned in the interviews (university processes, powerlessness and uncertainty about actions), it was not clear how widespread these were or how much of an impact they could be having on researchers. Therefore, it was essential for the survey to explore this in greater detail and also identify how the barriers could be overcome. A key finding from the survey in this regard, though perhaps an unsurprising one, is that the main barrier to climate action for over half of UK researchers is high workload. This is currently a critical issue in the UK - in a survey of University and College Union members, 74% of researchers said they may leave the sector by 2027, mainly due to workload as well as issues regarding pay and casualisation (University and College Union, 2022). Other research in the UK and internationally found that a smaller, but certainly not insignificant, number of researchers were thinking of moving elsewhere in the sector or leaving completely (37% and 36% respectively; Wellcome and Shift Learning, 2020). This also supports the suggestion by Urai and Kelly (2023) that the nature of modern academia means that academics have no energy to engage with climate change, with the authors also suggesting that new principles (based on Kate Raworth's (2018) Doughnut Economics) are needed to remove barriers to academics acting on climate change. Similarly, high workload is a barrier for climate education in primary and secondary schools (Walshe, 2023) and is one of the many barriers to universities becoming more sustainable (Blanco-Portela *et al.*, 2017).

Concerningly, almost half of researchers state that they do not know how to address climate change within their role and specifically state this as a barrier, as well as identifying knowledge about what actions to take as the most effective way that would enable them to act. This lack of knowledge reflects some existing research in universities (Bekaroo *et al.*, 2019; University of Bath, 2023a). When asked how they could use their role to positively address climate change, actions that related to the core functions of universities (teaching and research) were the most highly ranked, suggesting that researchers are most comfortable in these traditional university roles (i.e., what are commonly seen as universities' central functions). While applying sustainability principles to their work was also the most highly ranked, there is clearly a

Chapter 7: Interviews and survey: joint discussion

lack of knowledge about how to do this. There is important knowledge creation about climate change from the sector but it is argued that there is “a shortage of the skills needed to drive change from within” (The Royal Anniversary Trust, 2023, p.47). Given the survey results, this should also include guidance about how to practice research sustainably.

It is suggested that there is a role for Government with regards to knowledge about how to take climate action in the HE and further education sectors, with The Royal Anniversary Trust (2023) recommending the creation of an online hub of practical advice and information. Yet there is an existing resource—the Research for a Future toolkit—developed by academics themselves along with activists and other researchers as part of the organisation Faculty for a Future, to provide guidance for researchers around the climate crisis (Lumina *et al.*, n.d.). The toolkit was published after this survey took place and starts to fill an important gap. However, given that it is purposefully quite general (providing overall tools and advice rather than specific methodologies), there is still a need for more tailored advice for how researchers in different subject areas and at different career stages can better address the climate crisis in their research practices. The EAUC’s (n.d.b) HE Climate Action Toolkit is also specific to the Higher Education sector, but only offers suggestions for those at the uppermost levels of institutions (Vice-Chancellors, Governors, senior leadership teams) rather than tailored advice for researchers in different disciplines.

Another potential space for practical advice and information could be through Project Drawdown’s (n.d.) Job Function Action Guides which detail how employees can take climate action in different sectors, stating for each – “your job is a climate job”. They currently have job guides for professional services such as finance, human resources and marketing as well as specialisms such as product design and engineering. Given the number of sectors they cover are currently limited, there is certainly space to expand these further and include a guide for research, particularly given the numerous suggestions that researchers provided in the survey for how climate action could be incorporated into their roles. However, it is important to state that more information is unlikely to lead to more action by individuals – cultural and structural changes are also

Chapter 7: Interviews and survey: joint discussion

essential alongside this. This is clear from the survey as researchers highlighted multiple barriers and enablers to action which covered issues such as workload, power to act, institutional support and university processes. There also needs to be consideration about how to engage with researchers, as providing one-way communication about climate change and expecting that this information alone will lead to action (known as the knowledge deficit model) is not an effective way to engage with people or change behaviour (Pearce *et al.*, 2015).

It is worth noting that one of the aforementioned 'discourses of climate delay' relates to individualism (within 'redirect responsibility') which calls for individual change instead of systems change, and the authors explicitly call out British oil and gas company BP for creating the idea of a personal carbon footprint (Lamb *et al.*, 2020; Supran and Oreskes, 2021). While Research Question 2 has certainly focused on individuals more than the organisational level focus of Research Question 1, this research takes the view that researchers can take collective action and collectively comprise part of universities. In the interviews, research culture was seen as being influenced by people in power. Power also related to an important finding from the survey results, which showed that lack of agency or power is the third highest barrier to climate action by researchers. While one related to research culture generally and the other to climate action, across both the interviews and survey, the issue of power is seen as an important enabling or restricting factor.

Despite the lack of power that over a third of researchers currently feel, the survey also showed the potential collective power that researchers could have; given that almost all want to act on climate change in universities, they could have a large impact if they were enabled to do so. This reflects the results of a pilot study with students which found a lack of agency due to the scale of the climate crisis and the perceived gap between individual and wider social change (Leichenko, Gram-Hanssen and O'Brien, 2021) as well as research with a representative survey of the UK public which found that big barrier to climate action was the perceived lack of influence on key decision makers (Edgar and Baeck, 2023). Overall, the survey results show that both individual and organisational change is needed. For example, with researchers stating that

Chapter 7: Interviews and survey: joint discussion

research culture needs to change and that greater climate action is needed by universities, but also that they want to do more to address climate change in their roles.

Another barrier, for just over a quarter of researchers, is pressure to travel. By acting on travel, the university sector can not only reduce its emissions and change its culture in this area—as it has been argued is needed (Hoolohan *et al.*, 2021; Le Quéré *et al.*, 2015; The Royal Anniversary Trust, 2023)—but at the same time enable researchers to better address climate change in their roles by reducing this barrier for them. Travel has hitherto been a central part of research culture, and the majority of researchers feel that the research culture generally in their university needs to change in order to properly address climate change. There is a need for the sector to help researchers understand how to conduct their work in a low-carbon way but also be enabled to do so – as the majority feel that funding processes do not incentivise low-carbon approaches to research. This is an area that has recently been highlighted to Government to act upon, as “currently, no explicit consideration is required of the carbon impact of most research funding bids, including UKRI” (The Royal Anniversary Trust, 2023, p.35).

Enabling factors

Alongside identifying barriers to climate action in research practices, it is essential to understand how the university sector can overcome these. While there were some suggestions in the interviews, such as changing travel habits, teaching about climate change and attending conferences online, this was not explored extensively. Therefore, this was investigated in much greater detail in the survey which provided some key insights. One of these was that less pressure to travel would enable more than a quarter of researchers to take climate action in their roles, reflecting one of the suggestions in the interviews about changes to travel habits. Travel is a key area to address and has been discussed considerably in the literature (as noted above in relation to barriers), yet there are many other areas that would enable action and which were chosen by a greater number of researchers.

For just over half of researchers, having knowledge of what actions to take, more institutional support and reduced workload would enable them to take climate action in

Chapter 7: Interviews and survey: joint discussion

their roles. These suggestions cover different levels and areas, as they relate to individual change through increasing personal knowledge as well as wider cultural or structural issues that universities can act upon. Around a third of researchers also said that more funding for climate related research, more climate projects, greater agency or power, and different university processes would enable them to act. Again, these cover areas where action could be taken in varying ways, such as changes from funding bodies and both cultural and practical changes within universities. Existing literature about researchers' engagement with climate action often identifies barriers, therefore the results from this survey are particularly important as they go one step further to offer insights into how to overcome these common barriers – solutions which have been identified by researchers themselves.

Additionally, there were a very large number of comments from researchers about how they felt their universities and they themselves could better incorporate climate action into their research practices. These were valuable additions as the suggestions were in researchers' own words and can therefore highlight areas that they see as particularly important in addition to the list of answer options provided. Travel was the most common area where researchers thought that climate action could be taken in research practice – an area that universities as organisations had control over as well as researchers themselves. Funding, alongside other incentives and encouragement were other ways in which researchers thought that universities could address climate change within research practices. This is somewhat reflected in the literature, as lack of funding is a barrier with regards to conducting sustainability research and climate action at an organisational level (Blanco-Portela *et al.*, 2017; Leal Filho *et al.*, 2018; Overland *et al.*, 2022). Another area where researchers themselves felt they could better address climate change in their research practices was by having climate change as the subject of their research or working collaboratively. While conducting research on the subject of climate change means that it is part of their research, this does not automatically mean that they will engage in low-carbon research practices. This is evidenced by Whitmarsh *et al.* (2020) who found that climate researchers fly more than non-climate researchers.

Chapter 7: Interviews and survey: joint discussion

Overall, these results show that researchers have key insights and practical suggestions about how to move forwards that are, as of yet, untapped by universities. This builds on McCowan, Leal Filho and Brandli's (2021, p.146) suggestion for universities to ensure there are ways for academics to “develop their own sustainability [...] initiatives”. Acknowledging that researchers themselves are part of the university system, whether researchers will be able to move from their role of knowledge creation (mainstream) to addressing issues of power and inclusion (critical) and further to having different priorities (beyond) remains to be seen (Stein, 2023).

7.2.3 Professional differences between researchers

The survey showed multiple differences between researchers who work in climate change and those who do not. Non-climate researchers feel more uncertain about what climate actions to take and that what they do is less relevant. Also, climate researchers are more than twice as likely to feel they know how to address the topic at work and almost three times more likely to think their work can positively address it compared to non-climate researchers. They also feel their subject area is much more relevant for addressing climate change, reflecting findings in the education sector where some primary and secondary school teachers in the UK struggle to see how climate change links to their disciplines (Walshe, 2023). While it could be argued that these differences are to be expected given what they do in their roles, efforts should be made to reduce the gap between them so that those not working in climate change feel better able to contribute their own expertise; after all, climate change is an issue that spans all subject disciplines. For example, McCowan, Leal Filho and Brandli (2021) recommend that universities incorporate climate change across subject areas in research and teaching as one way to overcome barriers to climate action in the sector. Involvement from different types of researchers will allow for different ideas and forms of engagement, both within and outside of universities.

The results also identified some differences between the positions of researchers which were not apparent in existing literature. Early and mid-career researchers perceive a greater number of barriers in doing more on climate change than senior

Chapter 7: Interviews and survey: joint discussion

researchers/professors. While both face slightly different barriers, there is overlap, with both more likely than those in senior positions to say that a lack of agency or power, lack of materials/resources and too much professional risk are barriers. Early career researchers in particular face a lack of institutional support and lack of projects on climate change as well as uncertainty about what actions to take, whereas the biggest barrier—high workload—is faced more by mid-career researchers. Other research has shown that early career researchers in the UK face high workload, lack of recognition for their work, and negative impacts on their personal lives, and it is suggested that more funding for this group is needed (Wellcome and Shift Learning, 2020). While the research did not find that high workload was a particular barrier to climate action for early career researchers, I did not list impacts on personal wellbeing as a potential barrier. Overall, this suggests that different approaches are needed to enable researchers at different career stages to engage with climate change.

Exploring differences between subject areas also highlighted an interesting finding. It is unclear why medicine, health & life sciences researchers do not think their subject area is as relevant for addressing climate change compared to those in other disciplines. There was a similar finding for some health sciences and dental teaching staff in the United States, who felt both less comfortable and less responsible for teaching climate change than those in some other subject areas (science, agriculture & natural resources, and engineering; Beck, Sinatra and Lombardi, 2013), though potential reasons for this were not expanded upon. Several barriers to sustainable healthcare education have also been identified in the literature, including negative attitudes and a resistant organisational culture, with a call for future research to understand these further and how to overcome them (Bray *et al.*, 2023). In contrast, the Lancet Countdown (2019) makes the health aspects of the climate crisis very clear.

From a student perspective, one study found that only 1.8% of students at a London university felt they had been taught about sustainable healthcare, despite it now being a requirement for the curriculum (Gupta, Shantharam and MacDonald, 2022). The survey result is also interesting because health is commonly seen as a way to frame climate change (Badullovich, Grant and Colvin, 2020) and communicating climate change as a

Chapter 7: Interviews and survey: joint discussion

health issue can increase public support for climate policies (Dasandi *et al.*, 2022) – yet there appears to be a disconnect with medicine, health & life sciences researchers. It may be that this perceived lack of relevance will soon change, given calls for climate change to be better taught in medical schools (Bevan *et al.*, 2023; Grover, 2021) and a collaboration between the World Health Organization and the NHS to decarbonise global healthcare systems (World Health Organization, 2022). This survey finding underlines the importance of these initiatives in highlighting the link between health and climate.

7.3 Next steps

This chapter has explored the connections between the results from the interviews and surveys. Despite the extensive barriers to researchers being able to engage in climate action at work, there is a way forward. The survey results offer some clear actions for universities to take: mainly that researchers need more knowledge about what climate actions to take, institutional support to implement this and for the critical issue of high workload to be addressed. The extent to which these changes can be addressed without transforming universities in the way suggested by others (McGeown and Barry, 2023; Stein, 2023) is unknown. Yet that does not mean that progress cannot be made. The findings highlight that there needs to be tailored engagement and solutions for those at different career stages and in different subject areas, including support for those who are not involved climate change research and teaching. The next and final chapter will bring together the insights from all phases of research.

Chapter 8

Overall discussion and conclusions

Contents

8.1 Introduction and chapter overview	242
8.2 Discussion: dimensions of culture and governance in universities’ responses to the climate crisis	245
8.2.1 Status, power and rewards	245
8.2.2 Structure and collaboration	248
8.2.3 Knowledge	251
8.2.4 Visibility	253
8.2.5 Responsibility and advocacy	254
8.2.6 Purpose of universities	256
8.2.7 Conception of climate change and action	257
8.2.8 Relevance and scope of change	259
8.3 Conclusions	261
8.3.1 Research Question 1	262
8.3.2 Research Question 2	263
8.3.3 Overall conclusion	265
8.4 Limitations	266
8.5 Future research	267
8.6 Implications and impact	268

8.1 Introduction and chapter overview

My research aimed to explore the overarching Research Question of how are UK universities currently responding to the climate emergency and how are their researchers, as a key group within these institutions, implicated in climate action? I specifically focus on universities' climate emergency declarations and the culture and practices within universities that may shape engagement with climate change. This is covered in two Research Questions and underlying Research Objectives:

Research Question 1: How do universities' climate emergency declarations reflect their responses to climate change and what do they mean in practice?

Research Objective 1: Assess the role of universities' climate emergency declarations in their progress towards sustainability.

Research Objective 2: Identify subsequent processes following the climate emergency declarations within universities.

Research Question 1 was addressed through documentary analysis of 26 climate emergency declarations and participant observation of 11 working group meetings (Chapter 4). The declarations function in three ways: as promotional statements, as presenting a collective voice, and showing a commitment from the universities to action. The participant observation showed how one university subsequently responded, by recognising the scale of the challenge they faced, having a clear focus on action and aiming to model their response on an existing example of best practice from another university.

Research Question 2: How does university and research culture shape the way that academic researchers engage with climate change?

Research Objective 3: Identify and explain variability of the engagement of academic researchers on climate change.

Research Objective 4: Explore the factors that encourage and restrict engagement, and how they might be overcome.

Chapter 8: Overall discussion and conclusions

Research Question 2 was addressed through 22 interviews with university research and sustainability staff, and HE sector experts (Chapter 5 and 7) along with a UK-wide representative survey of 1,853 researchers across 127 universities (Chapter 6 and 7). The results indicated that university and research culture shape how researchers engage with climate change in multiple ways.

As these topic areas had largely not been addressed prior to the work in this Thesis, this research was exploratory and aimed to shed light on climate action in universities at individual, community and organisational levels. The climate emergency declarations were a live issue emerging at the start of my PhD, therefore research into the declarations and their impact had not yet been conducted. Additionally, while interest in universities and climate action has grown throughout the course of my PhD, there has been little focus on researchers' engagement with climate change. Four research studies were conducted overall, with two relating to each Research Question (see Table 13).

Table 13. Overview of research methods and Research Questions.

Overarching Research Question: how are UK universities currently responding to the climate emergency and how are their researchers implicated in climate action?			
Research Question 1		Research Question 2	
Qualitative			Quantitative
Stage 1	Stage 2	Stage 3	Stage 4
Documentary analysis of universities' climate emergency declarations	Participant observation of a series of internal university working group meetings following one university's climate emergency declaration	Interviews with university staff and staff from organisations with expertise on UK higher education	Survey of university researchers from across the UK

Chapter 8: Overall discussion and conclusions

The findings offer novel insights into these areas, suggesting that some universities are responding to the climate crisis, leading to internal action in some cases but there is currently a lack of meaningful engagement with a core group in the organisations - researchers. In order to effectively address the climate crisis, universities need to consider how to leverage their climate emergency declarations and better engage with their researchers to enable them to take climate action. Joint discussions of the research studies for Research Questions 1 and 2 can be found in Chapter 4 (documentary analysis and participant observation) and Chapter 7 (interviews and survey).

This final chapter brings together the results from all phases of the research to draw overarching conclusions in relation to Research Questions 1 and 2 and situate this in the theoretical and practical frameworks outlined in Chapter 3. In the discussion below I draw on critical theory, a theory which aims to understand power, knowledge, what shapes society and organisations, how ideas are formed, and culture and practices (Duberley, Johnson and Cassell, 2013; Prasad and Caproni, 1997). As explained in Chapter 3, the following discussion is organised using a practical framework (Table 14) reflecting elements of critical theory and relevant areas of literature to consolidate the findings across the different research studies. The framework consists of relevant and important factors in the context of my research.

Table 14. Adapted dimensions of governance and culture from the HOCH^N project.

Dimensions of governance and culture related to climate action in universities
Status, power and rewards
Structure and collaboration
Knowledge
Visibility
Responsibility and advocacy
Purpose of universities

Conception of climate change and action
Relevance and scope of change

This practical framework is an amalgamation of two pieces of research from the HOCH^N ('Sustainability at Higher Education Institutions: develop — network — report') project which outlines dimensions related to culture and governance in HEIs to understand how different institutions are approaching sustainability (Bauer *et al.*, 2020; Niedlich *et al.*, 2019). I have adjusted the dimensions (changes outlined in Chapter 3) so that they more closely relate to research and the context of this Thesis.

The structure of the chapter is as follows. The research findings are discussed (section 8.2) in relation to the eight dimensions outlined above. This is then followed by key conclusions from the work (section 8.3) before outlining limitations (section 8.4) and opportunities for future research (section 8.5). The chapter concludes with implications and impact from the research (section 8.6).

8.2 Discussion: dimensions of culture and governance in universities' responses to the climate crisis

8.2.1 Status, power and rewards

This dimension relates to how sustainability is put into practice and given legitimacy internally and externally by those within universities (Bauer *et al.*, 2020). Power is also a key element of critical theory in terms of understanding what shapes organisations (Prasad and Caproni, 1997). The findings demonstrated climate action being implemented and legitimised in different ways, with evidence of status, power and rewards playing an important role in how universities and researchers respond to the climate crisis across the four research studies.

Chapter 8: Overall discussion and conclusions

The documentary analysis shows that this legitimisation is partially external as universities appeared keen to demonstrate that others had already declared climate emergencies, a framing which gave more legitimacy to their declarations through showing they are part of a wider initiative. The tangible outcomes and practices mentioned in the declarations also demonstrate ways in which the universities' actions are made legitimate and can be scrutinised in future both internally, such as by senior leadership teams or students, and externally by the wider HE sector. Despite some concerns in the literature about the use of emergency framing in terms of how this power could be used in an anti-democratic way (McHugh, Lemos and Morrison, 2021), the university declarations did not indicate an authoritarian approach to action. This is in line with other research into climate emergency declarations that reflected on this concern (Greenfield, Moloney and Granberg, 2022).

While the declarations were used in part as promotional statements and to draw attention to their achievements, for example through reference to rankings, awards and existing actions, this indication of wanting to have leadership status did not appear to extend to transforming or re-purposing universities as some academics suggest is needed (McGeown and Barry, 2023; Stein, 2023; Sterling, 2013). This partially supports O'Neill and Sinden's (2021) suggestion that universities may use sustainability as a tool to give themselves a particular status and look good instead of to transform themselves. Nevertheless, the declarations did include action-oriented statements and commitments, and this was reflected in the meeting observations which suggested a genuine desire from those involved to take climate action.

Innovative power, the ability to create new visible products or resources (Avelino, 2017), was shown through the use of the climate emergency declarations. As public documents, the declarations were powerful in letting universities shape how they want to be seen but also have the potential to shape what action is taken afterwards. The working group that was specifically tasked with looking at the climate emergency declaration had legitimacy and a certain degree of power given their remit and delegated authority to look at the issue, yet still had to operate within university governance structures which meant their decision-making was limited to

Chapter 8: Overall discussion and conclusions

recommendations rather than taking action. This reflects the importance of governance in organisational decision-making and actions (Kim, 2008). Additionally, the use of the University of Exeter's White Paper (Osborne *et al.*, 2019) as the standard to work towards provided a degree of structure that was externally legitimised by being seen as best practice, and it is possible that a different approach would have been taken if the White Paper had not been published.

Reflecting the climate emergency declarations, some interview participants spoke about how universities wanted to be perceived positively regarding climate action and to be seen as leaders, with almost all interview participants stating that universities have a responsibility to act due to their influence as “thought leaders”, their role in education and the size of the organisations. This view on responsibility was also backed up by the survey results. The potential for transformative power (Avelino, 2017) was seen in the interviews where those perceived to have power in universities, as well as funders, were seen to influence research culture. Reinforcive power (*ibid*) was also seen in the interviews and survey in terms of how researchers felt unable to act, though there may be multiple people or structures which contribute to this. Some researchers spoke about their perceived lack of power and influence in taking climate action and this was reflected in the survey, with a lack of agency or power being the third highest barrier to climate action by researchers – reflecting existing research with students and the public (Edgar and Baeck, 2023; Leichenko, Gram-Hanssen and O'Brien, 2021). Yet as the survey found that almost all researchers want to take climate action in universities, researchers have potential collective power to make a large impact. This could relate to innovative power through changing cultures, or even transformative power to create new structures.

Rewards were spoken about in the interviews in relation to shared assumptions and behaviours within research culture, specifically international recognition being important for career development, which can work against climate action. However, the research findings did not indicate a clear link between climate action and structures of reward and pay in universities. Overall, the results indicate that universities are seen to have a

Chapter 8: Overall discussion and conclusions

key role in taking climate action, yet power can be an enabling or restricting factor for researchers to be part of this action.

8.2.2 Structure and collaboration

This dimension relates to how climate change is understood and implemented by different areas within universities, how a collaborative understanding of climate change can be developed, and how collaborative work takes place (Bauer *et al.*, 2020). Again, this dimension also closely relates to a key aspect of critical theory – internal and external connections and contexts (Prasad and Caproni, 1997). The findings from this research show how the climate crisis is understood and acted upon by universities and researchers through different structures or connections. This emerged in different ways from the four research studies.

The documentary analysis demonstrated the way in which universities situate themselves with regards to the climate crisis, drawing attention to their declarations being part of a bigger movement within and beyond the sector. Though these are not direct collaborations, they show that universities see their actions as connecting with others in the sector and more widely. Students and staff, however, are positioned as key collaborators in relation to climate change and sustainability in many of the declarations, reflecting a theme of collaboration in local government declarations and subsequent meetings in the UK and internationally (Gudde *et al.*, 2021; Harvey-Scholes *et al.*, 2023; Salvia *et al.*, 2023). The climate emergency declarations, as a form of communication, are clearly intended to demonstrate that responding to the climate emergency is a collective endeavour which requires both formal structures of joint working and informal collaboration, though this approach may not necessarily be taken through into subsequent actions.

However, looking to others for guidance and a wider movement to situate themselves in was reflected in the case study participant observation, with the University of Exeter's White Paper (Osborne *et al.*, 2019) having a strong influence on the approach taken by those in the working group as it was an early example of what the next step beyond the

Chapter 8: Overall discussion and conclusions

declaration itself could look like. Collaboration was also a strong feature with regards to working closely with others both inside and outside the working group to progress their actions. The declaration had an enabling effect in bringing people together to collaborate and attempt to use their leverage to create change through a specific structure. While operating within this structure meant they had crucial buy-in from and a direct connection to their university's executive team, it also meant that they were limited by what the executive team deemed appropriate. Additionally, given that not integrating sustainability into strategies is a barrier to action in European universities, (Stöber, Gaebel and Morrisroe, 2021), the declarations and subsequent working groups such as this may offer an opportunity to integrate action into relevant university strategies and policies. For example, this could be enacted through climate action plans.

Collaboration was not a key topic in the interviews, though sustainability staff did speak positively about the networks and groups that universities use to share knowledge and collaborate on climate action, demonstrating that working together is important enough to justify having formal structures in place to facilitate this. Universities are building on the work of others in their sector rather than acting on their own, as demonstrated by these networks, along with the University of Exeter's White Paper (Osborne *et al.*, 2019) being used as a guide for the working group and the declarations showing how universities are part of a wider movement. However, the declarations were not sector-wide, nor did there appear to be a strategic response to action afterwards given that the working group were mainly using a single example of how another university had acted after making a declaration. Therefore, it may be that university climate action is well connected and strategic in some respects but less so in others.

In the survey, new or different ways of collaborating with other researchers, including working collaboratively on climate-related topics, also highlighted ways in which universities and researchers themselves could better incorporate climate action in research practices. Some of the barriers to taking climate action that researchers identified in the survey related to university structures. On the one hand, researchers feel that university processes and research frameworks are inflexible and want these to

Chapter 8: Overall discussion and conclusions

change. On the other hand, researchers also said there are a lack of legislative initiatives/requirements and that having more would enable them to take greater climate action. This suggests a need for universities and the wider sector to have a more in depth understanding of which structures and processes need to offer more flexibility for researchers and where it would be helpful for others to be more prescriptive. While there is a considerable gap in European universities taking some level of climate action within research practices (around half) and whether comprehensive policies and processes have been put in place (around a quarter; Stöber, Gaebel and Morrisroe, 2021), changes to more formalised structures and processes will not be able to fully address climate action within research. Many aspects are closely related to university and research culture which may be less visible (Kotter and Heskett, 1992) but nevertheless essential to address.

In the survey, there were also some comments about disjointed action such as differences between departmental and university-wide level action in that the climate crisis was being considered more in some areas than others. While this was not extensive, they are worth considering in the context of existing literature. Research into European universities found that for most, climate action is taken across the institution, though some is initiated at a department or faculty level and there is considerable variation regarding whether universities encourage, incentivise or stipulate various actions such as sustainable commuting (Stöber, Gaebel and Morrisroe, 2021). Action across different areas is positive, as it is possible for culture change to emerge in different ways (Adams, Martin and Boom, 2018; Kotter and Heskett, 1992) and there are a broad range of actions that need to be taken. However, actions would benefit from being better joined up or at least there should be a greater awareness of the actions being taken by others.

Researchers comprise an important group within universities and can take collective climate action. It is important for researchers to share with others that they want to take action and work together to find ways of doing so, as the survey showed researchers' lack of knowledge of their peers' actions and perceptions about the climate crisis. It may be that aspects of culture, such as behavioural norms, related to how researchers

Chapter 8: Overall discussion and conclusions

engage with one another need to change if more knowledge needs to be shared between them. They could have a large impact given that the survey found almost all researchers want to act on climate change in universities. For the momentum of the climate emergency declarations by UK local authorities to be maintained and turned into action, Howarth *et al.* (2023) suggest they need to work with and be supported by others such as central government, public and civic actors, and the private sector. Similarly in the university context, it would benefit both researchers and universities as institutions to find ways for researchers to take climate action given that the present research shows researchers do in fact want to be a bigger part of university climate action. A collaborative understanding of climate action can be developed by building greater connections and collaboration between researchers within and between subject areas and institutions, allowing for the sharing of ideas about low-carbon research practices.

8.2.3 Knowledge

This dimension relates to knowledge of climate change within universities and how this can be effectively addressed across the organisation (Bauer *et al.*, 2020). The results from all research studies showed that knowledge of the climate crisis and how to take climate action within universities is mixed.

In the documentary analysis and case study participant observation, knowledge is closely linked to leadership and data. References to subject expertise as well as forms of leadership such as rankings and being the “best” or “first” at taking certain climate or sustainability actions are all illustrations of how universities sought to showcase their high level of knowledge of the subject area in the climate emergency declarations. In the working group meetings, people attending were brought together due to their different and relevant areas of knowledge to progress climate action. Knowledge, in the form of data, was used in the meetings to legitimise action and make evidence-based decisions. This builds on how the declarations use knowledge, taking knowledge from its use as a statement to being used with the aim of highlight action. Behind this, there was also a clear imperative throughout the course of the meetings to collect data, which

Chapter 8: Overall discussion and conclusions

was often seen to be lacking or required effort to collect. Greenfield, Moloney and Granberg (2022) argue that climate emergency declarations present an opportunity to empower communities by providing them with knowledge about how to act, normalising actions that are appropriate for the level of urgency needed.

The interviews and survey suggested that greater knowledge of climate action and how this is perceived and enacted by others is needed. There was uncertainty from sustainability staff about how widespread knowledge of their work is. Research into European universities found that almost all undertake internal communications about “responsible consumption and production” but around half do not have comprehensive policies or processes in place to do so (Stöber, Gaebel and Morrisroe, 2021, p.10). The survey data provided further insights, with a majority of researchers having some level of knowledge about their universities’ climate action, but the breadth and depth of this knowledge varied considerably and was often surface level. Researchers also lack knowledge about what their peers think about climate action, a key barrier to overcome given that existing research shows the importance of interpersonal influence and that, globally, people underestimate others’ willingness to act (Andre, 2024; Capstick *et al.*, 2021).

As well as knowledge of institutional climate action, (lack of) knowledge also came out as an important result from the survey in relation to researchers’ ability to take climate action. The findings show that almost half of researchers do not know how to take climate action in their roles and climate researchers are more than twice as likely to feel they know how to address the topic compared to non-climate researchers. Given that staff engagement is seen as an important driver for climate action by 97% of European universities (Stöber, Gaebel and Morrisroe, 2021), this suggests that the results of the present research in finding that researchers are highly concerned and want to take climate action should be a clear indication for universities to go further. Climate action has also led to greater awareness and behaviour change for staff for three-quarters of European universities (*ibid*), suggesting that this is a two-way street. Given that just over a third of universities stated that a barrier to climate action was a lack of staff engagement, and on the flipside, that more engagement would enable universities to

Chapter 8: Overall discussion and conclusions

act (ibid), this perhaps suggests a contradiction or challenge in that universities want more engagement from staff, but that staff (or researchers at least) do not know what to do.

The findings from the research studies suggest that knowledge about the climate crisis and how to address it varies between and within different groups in universities. Given that researchers offered many suggestions in the survey for how climate action could be incorporated into their research practices, using these ideas is a clear way for universities and the wider sector to further climate action.

8.2.4 Visibility

This dimension relates to how universities make their climate actions visible and create awareness of these issues (Bauer *et al.*, 2020). The research studies found differing levels of visibility and awareness in relation to the climate emergency declarations as well as climate actions more widely, and also at different levels within universities.

Climate emergency declarations have been made across the world (Centre for Climate Safety, cedamia and Vote Climate Australia, 2023), acknowledgements of the climate crisis that were widespread and highly visible. While declarations at a governmental level were more high profile, the documentary analysis showed that UK universities were no exception to this visibility, with a high concentration of declarations within the first six months of the first declaration by a UK university, some declaring on days where greater publicity would have been expected such as the start of climate change strikes and World Environment Day, and the majority being published as news articles rather than in other less visible formats. The declarations were a key way in which universities made their existing climate actions or commitments visible and raised awareness of this.

While the declaration was public, the case study participant observation was an example of how subsequent actions may not be, as the working group meetings were internally facing. This means that it may be challenging for researchers or the wider university community to understand what actions universities are taking, contribute to

Chapter 8: Overall discussion and conclusions

actions themselves or hold their institutions to account. The ability to communicate climate actions more widely has been a challenge for some local authorities after declaring climate emergencies (Alkhayat *et al.*, 2023) and this topic was also discussed in the interviews with sustainability staff who suggested that more climate communication and engagement within their universities was needed, which links back to the previous dimension (8.2.3) regarding the level of knowledge that researchers have about their universities' climate action. Therefore, while there may be much action taking place internally, lack of communication can mean that this is not always visible to the wider university community.

Both the survey and interviews highlighted some further issues around how the words from universities may be visible but their actions less so. This may have contributed to the number of researchers (over 100) who mentioned issues of greenwashing and lip service in the survey results. If universities want to build engagement with researchers, they need to be able to communicate effectively about the actions being taken, not only their intent. Yet this is not limited to institution-level action – given that researchers are unsure of what their peers think, ensuring greater visibility of their own actions can contribute towards knowledge of climate action within universities at multiple levels. Researchers already think that certain visible actions such as teaching are particularly impactful in addressing climate change even if they see actions that are visible in different ways, such as campaigning and mobilisation or awareness raising with the public, as some of the least impactful. Therefore, it may be that they need to share what they are already doing with their peers.

Overall, “taking authentic action and being *seen* to be doing so is crucial” with regards to climate action in universities (Mocatta and White, 2023, p.290, emphasis in original) and the results from my research confirm the need for this. This can be seen in the symbolism of the climate emergency declarations through to taking action to back them up, but also the need for researchers to be aware of what actions their universities are taking and how they can be part of that.

8.2.5 Responsibility and advocacy

Chapter 8: Overall discussion and conclusions

This dimension relates to the roles that universities, and those within them, have in addressing climate change within their institutions (Niedlich *et al.*, 2019). Responsibility for climate action in universities was evidenced mainly in the documentary analysis, interviews and survey, though this did also manifest in the participant observation. Similarly, advocacy was evidenced mainly through the survey results but also somewhat through the other research studies.

The documentary analysis showed that several universities explicitly stated that they had responsibility for taking climate action across their key roles of research and education as well as through reducing their own emissions. Even where this was not explicitly mentioned, the use of declarations in and of themselves implicitly suggests that all these universities felt they had some level of responsibility in speaking out about the climate crisis. In some cases, the process of advocacy and activism by staff and students led to the declarations, and making a climate emergency declaration itself is also a form of advocacy, which could be seen as activism, as making it public facing rather than only using internal processes is advocating for action and for the issue to be taken seriously.

While responsibility and advocacy were not explicitly spoken about in the case study participant observation, it was nevertheless demonstrated in several ways. The working group regularly placed responsibility on its members by tasking different people with specific actions to make progress. Given that the working group itself was made responsible for addressing the climate emergency within the university, this meant they had a high level of responsibility for suggesting what the next steps could be after the declaration. However, they still had to advocate to the university executive team for why particular actions should be taken. This dual role of the executive team or other senior staff in the university demonstrates that they want to show that the university recognises the seriousness of the climate emergency and wants to act but that they can also become a barrier to allowing action to happen.

The interviews showed that almost all participants felt universities have a responsibility to take climate action, and that universities themselves feel they have this responsibility

Chapter 8: Overall discussion and conclusions

too. This was backed up in the survey results, which showed that researchers think governments, research councils and universities themselves have a particularly high level of responsibility to act to address climate change within universities. This reflects prior activity by academics who pushed for universities to declare climate emergencies and highlighted the importance of them taking action (Ripple *et al.*, 2019; Times Higher Education, 2019). The survey also highlighted that advocacy and activism may be viewed differently by researchers - while almost all researchers support advocacy by their peers, taking part in campaigning themselves was not seen as particularly impactful.

8.2.6 Purpose of universities

This dimension relates to information about the key purposes of universities and their wider interaction with society (Niedlich *et al.*, 2019). How the roles of researchers and universities link to climate action were areas that came up mainly in the documentary analysis, interviews and survey.

The documentary analysis showed that universities spoke about the purpose of their declarations as well as how they saw their institutional roles in relation to this or broader climate action (research, education and reducing their own emissions), suggesting that these were particular areas where they saw themselves having responsibility (see section 8.2.5 above). Also, universities' declarations suggest something about what they see as their role in society given that they felt it was appropriate to make their declarations and that in some way it links to their purpose, whether that is research, education, as contributors to the economy and society more broadly (Atherton, Lewis and Bolton, 2023), or an aspect beyond those. It has been argued that universities will need to make major changes to how they operate and make decisions to address climate change (Owen-Smith, 2023) and some academics have called for the transformation of universities (McGeown and Barry, 2023; Stein, 2023). However, the idea of more transformative change to the operation and ethos of universities was only occasionally touched upon in the declarations. Culture change across a whole organisation can take a long time (Kotter, 2012) and it is unclear whether the

Chapter 8: Overall discussion and conclusions

declarations may have started this process in universities or perhaps whether acknowledging the negative impact of the climate emergency could prompt university culture to change, as Schein and Schein (2016) argue that a negative outcome or instance can initiate change.

In the interviews, it was noticeable that most researchers did not perceive any changes in their roles due to climate change or think that it would impact their work, particularly given the level of importance that researchers gave to this issue. Additionally, the survey found that while teaching, research and applying sustainability principles to their work were seen as avenues through which researchers felt they could use their role to take climate action, almost half said they do not actually know how to address climate change within their role. This lack of knowledge suggests that climate action has not become sufficiently embedded into the core roles of universities or into research culture and practices.

While interview participants saw universities as having responsibility for climate action, they felt universities' roles related to what are usually seen as their key functions - education, research and knowledge creation (Boulton and Lucas, 2008). The survey found that a majority of researchers see their role (as a researcher) as relevant for addressing climate change, with just under half stating that they felt their work has or could have a positive impact in addressing it. While they were not asked about what they see as the purpose of their research roles, the fact that they thought both their role and subject areas are relevant to addressing climate change is important given that researchers are a key group within universities in relation to climate action.

In the literature, there was discussion about the impact that different sources of funding may have on universities. However, this did not surface in the research findings as a particular impact on climate action. It may have been that this would have come up had I asked about this more explicitly or engaging with people in more administrative and leadership roles with responsibility for funding and budgets.

8.2.7 Conception of climate change and action

Chapter 8: Overall discussion and conclusions

This dimension relates to what climate change and climate action means within and between different universities (Niedlich *et al.*, 2019) and links to critical theory with regards to what encompasses different ideologies (Prasad and Caproni, 1997). Across all research studies, climate change was seen as an important and concerning issue, with the framing of a 'climate emergency' in the documentary analysis and participant observation signalling that the issue is being considered in a new way.

The idea of climate change as an 'emergency' is both reflective of the particular moment in time that this research took place as well as likely shaping universities' responses. The declarations reflect a symbolic moment in time when the notion of a climate emergency was particularly prominent in the UK and more widely (Centre for Climate Safety, cedamia and Vote Climate Australia, 2023; Farand, 2019). The declarations themselves were published during a short period of time and did show commitment through policies and targets, for example, reflecting that it is a serious and urgent issue. Additionally, a small number of universities specifically declared an ecological, biodiversity or environmental emergency as well as a climate emergency, showing that they conceive of these as broader and interlinked concerns. While many universities were taking climate action prior to the declarations—People & Planet (2021) have been monitoring universities' "green" credentials in their University League since 2017—the climate emergency movement is a new phase in how climate change is seen and acted upon. However, the declaration of an emergency is only one step towards climate action and there may be a reputational risk to universities if they are not already taking sufficient action or intend to do so after declaring.

How climate change and action were understood in the case study participant observation was broadly in line with universities' climate emergency declarations, unsurprisingly given the working group was set up to produce a climate emergency action plan following their declaration. This shows that senior university staff want to show that the institution recognises the seriousness of the climate emergency and wants to act, and this attitude was reflected by the working group members.

Chapter 8: Overall discussion and conclusions

In the interviews and survey, how climate change was viewed was reflected in the language used by researchers (“terrifying” and “very important”) as well as their high level of concern, with almost all saying they are extremely, very or somewhat worried. It is, however, seen as an issue that they have some level of control over, with almost all researchers wanting to do more on climate change in their university. Still, it is important to state that this concern and desire to act does not translate to action, linking back to the importance of sharing knowledge in this area as uncertainty about what actions to take was a key barrier for researchers in taking climate action. In addition, how researchers understand their roles and how they could be changed to better address the climate crisis is part of a wider cultural practice to determine appropriate shared beliefs and behaviours.

8.2.8 Relevance and scope of change

This dimension relates to the extent to which change is intended and how relevant it will be across the whole organisation (Niedlich *et al.*, 2019). All four research studies offered insights into the extent to which change is intended—and needed—within universities in order to take climate action.

The documentary analysis of the declarations showed how universities are already taking some climate and sustainability actions as well as an intent to take further action through reference to various commitments such as policies and targets. However, as noted in section 8.2.6 above, the scope of change is limited as none go as far as to suggest re-purposing universities and transformative change was only touched upon by a small number of universities. Given the difficulty of culture change (Kotter and Heskett, 1992), it is perhaps unsurprising that universities were not more forthright on this topic in their declarations, and this nevertheless may be something that is being addressed internally rather than being declared publicly. Additionally, the declarations themselves cannot fully show the scope of change, as they are a snapshot of universities’ public-facing intentions and perspectives.

Chapter 8: Overall discussion and conclusions

The participant observation showed that the creation of a working group to produce a climate emergency action plan which was being seen at the highest levels of the university points to a change in how the university is addressing the climate emergency but is only a preliminary step in making further emissions reductions and the steps taken beyond the conclusion of these meetings were beyond the scope of this research.

Throughout the course of the working group meetings, they set out what changes could be made across the institution and while behavioural and cultural change were mentioned in the declarations or meetings, they did not come out as key themes.

However, frequent fliers were spoken about in several meetings and culture change was mentioned as being a key part of the University of Exeter White Paper (Osborne *et al.*, 2019). This suggests that behavioural and cultural change are not as prominent as other areas of climate action, despite being a barrier to action within universities (Adams, Martin and Boom, 2018; Sterling, 2013). Culture consists of assumed behaviours and beliefs, some elements of which are less visible such as shared norms (Kotter and Heskett, 1992; Schein and Schein, 2016), therefore these may be more difficult to have addressed during the working group meetings.

In the interviews, some participants mentioned how climate change is influencing how their university operates, though the survey showed that many researchers think universities are not doing enough, suggesting perhaps that the scope of change is too narrow or that it has not become sufficiently embedded. The survey also showed that researchers mainly want more knowledge of what actions to take, more institutional support and reduced workload to enable them to take climate action in their roles. The barriers to action and how to overcome them encompass personal knowledge as well as cultural and practical issues, demonstrating the scope of change that is needed for climate action to become embedded in research culture and practices. This reflects the different elements of culture and how it can change, in that changes to both behaviour and mindsets are needed in order for culture change to occur and be lasting (Schein and Schein, 2016).

Research is not a standalone category that universities are being scored on in the People & Planet University League (2023a) at present. This Thesis shows many areas

Chapter 8: Overall discussion and conclusions

of research culture and practices where changes need to be made to better address the climate crisis. Therefore, I recommend that a new category of research would be valuable, as universities may focus more on this area because the University League gives importance to certain areas and universities are aware of it. Yet changes are not solely at an institutional level – researchers themselves are part of the system (ALLEA, 2022) and should be included in the scope of change when taking climate action within universities. The scope and types of climate action will vary across different levels—from individual to community to organisational—something that is reflected in other research which suggested tailored advice for different sectors and types of organisations in order to take effective climate action (O’Leary *et al.*, 2023).

8.3 Conclusions

This research is grounded in a critical theory approach and my aim is to enable greater climate action by universities and researchers as well as the broader HE sector. The results have clear practical impacts for researchers, universities and the wider HE sector, in addition to the research being for an academic Thesis. To this end, I draw key conclusions below for Research Question 1 and 2 that demonstrate how the findings can be taken forward. The latest University League data by People & Planet (2023) shows that universities across the UK are increasingly engaged with issues around sustainability and ethics but that there is still a significant amount of action to be taken. This research shows several ways in which this could happen.

Given the ‘emergency’ framing of the declarations and the fact that they were published four to five years ago (at the time of writing), it is hoped that any actions directly following on from the declarations would have already taken place or at least have been initiated and in progress. Therefore, the conclusions below for Research Question 1 are broader and more reflective as the declarations occurred at a specific moment in time when the idea of a climate emergency was particularly prominent. Whereas the conclusions for Research Question 2 are more future orientated as it is less time-bound and there are some clear actions that can be taken in the sector.

8.3.1 Research Question 1

Research Question 1 asked: How do universities' climate emergency declarations reflect their responses to climate change and what do they mean in practice? This was addressed through documentary analysis of 26 climate emergency declarations and participant observation of 11 working group meetings (Chapter 4). The results indicated that the declarations function in three key ways: as promotional statements, as presenting a collective voice, and showing a commitment from the universities to action. In practice, the participant observation provided an example of how one university responded in working group meetings by recognising the scale of the challenge they faced, having a clear focus on action and aiming to model their response on an existing example of best practice from another university.

From this data, there are two key conclusions that can be drawn which relate to (1) communicating about climate action and leveraging the declarations for change, and (2) sharing best practice.

(1) Universities should reflect on how to better communicate about their climate actions and consider how to share best practice in responding to their declarations and future climate actions.

The declarations partially functioned as promotional statements, though they did also include commitments and action-oriented statements. Nevertheless, the promotional aspect of the declarations risks diminishing the significance and urgency of the action required. Some of the results from Research Question 2 also link to this conclusion. Senior leadership or those tasked with taking action resulting from the declarations should better communicate with the university community about their approach and actions as greater awareness of institutional climate action is needed as well as how researchers may form part of this. Given that the case study university relied heavily on the University of Exeter's White Paper, this demonstrated how valuable sharing information and best practice about climate action is, even though the interviews suggested that universities already have multiple sustainability networks and share

Chapter 8: Overall discussion and conclusions

information (such as through the EAUC). Therefore, routes such as these which enable engagement between universities are important and should perhaps be amplified further by better connecting universities that have made climate emergency declarations to share knowledge.

(2) Universities should consider how to leverage their climate emergency declarations to drive change.

The content of the declarations can have the power to shape what action is taken afterwards, and they should be a starting point for further action rather than an end in and of themselves. While the case study university used a working group as a next step following their declaration and this seemed to be broadly effective in terms of having access to senior leadership, other methods of responding to the declaration may have been possible. For example, the declarations indicated that other universities took different approaches, some more consultative than others. Reflecting on the pros and cons of different approaches and sharing this knowledge would enable universities to consider how best to approach future action. The declarations are an opportunity to leverage the buy-in from senior leadership and continue to create change, as both the declarations and the meeting observations showed that senior leadership at universities shapes climate action as both will have had input or sign off at a this high level.

8.3.2 Research Question 2

Research Question 2 asked: How does university and research culture shape the way that academic researchers engage with climate change? This was addressed through 22 interviews with university research and sustainability staff and HE sector experts (Chapter 5 and 7) and a UK-wide survey of 1,853 researchers across 127 universities (Chapter 6 and 7). The results indicated that university and research culture does shape how researchers engage with climate change. Their engagement is shaped through a variety of issues with differing levels of visibility such as workload, university processes, power, and pressure to travel, with researchers themselves stating that research culture needs to change to address climate change in universities.

Chapter 8: Overall discussion and conclusions

From the interviews and survey data, there are two key conclusions that can be drawn which relate to (1) knowledge and institutional culture and (2) targeted solutions.

(1) The university sector should help researchers understand how to engage in climate action in universities, as well as creating the culture and conditions for them to do so.

It is essential that universities understand that researchers want to take climate action in their institutions, both within and outside of their roles. A key next step is to provide researchers with more knowledge about what climate actions they can take but also institutional support to implement these actions and allocated time within their roles for them to do so. However, institutional support and actions should not be taken purely through sustainability teams; while this could be enacted through institutional climate action plans, funding bodies and university leadership should also consider how wider processes can facilitate researchers to act. The multiple barriers that researchers face need to be addressed as well as the enabling actions required to overcome them. For example, travel is a central part of research culture and pressure to travel is a barrier to climate action. Additionally, continuing to improve institutional climate action and increasing researchers' awareness of this is important, while also ensuring that responsibility to act is not solely shifted to researchers.

(2) The university sector should provide tailored engagement and solutions for researchers at different career stages and in different subject areas.

The sector should enable researchers to better understand how to address the climate crisis in their research practices in a relevant way for their subject areas and career stages. Universities need to make appropriate changes and offer relevant support for this. For example, efforts should be made to reduce the gap between climate and non-climate researchers so that those not working in climate change feel better able to contribute their own expertise. Involvement from different types of researchers will allow for different ideas and forms of engagement, both within and outside of universities.

8.3.3 Overall conclusion

Interest in the relationship between the activities of universities and climate action is growing. The flurry of climate emergency declarations in 2019/20 showed that universities were publicly acknowledging the importance of this issue and the need to take action but given that it was an emerging phenomenon, research was needed to gain insights into this novel practice. In addition, until recently there has been little focus on the critical role of researchers, particularly with regards to how research practices and culture can enable or inhibit change. This Thesis therefore addresses these gaps through an overarching research question exploring how universities are currently responding to the climate emergency and how their researchers are implicated in climate action.

Analysis of the climate emergency declarations showed that they function as promotional statements, as presenting a collective voice, and showing a commitment to action. The participant observation provided insights into how this was taken forward by having a clear focus on action, recognising the scale of the challenge and drawing on a prominent example of existing work in the sector. In exploring researchers' engagement with climate change in universities, the results showed that most have some knowledge of actions being taken by their organisations and feel that the declarations are making a difference, almost half think not enough is being done. Insights into how university and research culture shapes researchers' engagement showed that there are several key barriers to and enablers for action across a broad range of areas including workload, knowledge, power and institutional support.

To draw the findings together, I looked at them through the lens of eight dimensions related to culture and governance in HEIs which are important for understanding how the sector approaches climate change. All the dimensions were relevant to the results, with some or all of the research studies showing clear connections to each dimension. The relevance of all the dimensions to my results supports this practical framework by Bauer *et al.* (2020) and Niedlich *et al.* (2019) and demonstrates the need for climate

Chapter 8: Overall discussion and conclusions

action in UK universities to have a wide remit, addressing aspects of both culture and governance. These dimensions also sit underneath the overall theoretical framework of critical theory which I used as a general guide for the research. Some of the key elements of critical theory (power, connections and contexts) explicitly link to the dimensions and research results above. Additionally, another key element of critical theory is reflection and suggestions for change, for which I outlined key conclusions above that demonstrate how the findings can be taken forward. There are important practical steps that can be taken already based on the insights from this body of research and other existing evidence. Nevertheless, there are avenues for future research in this area which are explored in section 8.5.

8.4 Limitations

While the research has uncovered important insights, there are nevertheless some limitations to the work. A limitation of not being able to begin my case study participant observation until the third meeting of the working group, compounded by the fact that my approach was to not engage in the discussions as I was not officially a member of the working group, meant that some context is missing such as when it was set up, who made the decision to do so, and what they were tasked with achieving. If this information had been available, it may not have changed the overall results but could have provided insights into how much power the working group had to create change. Similarly, in the documentary analysis, the background context to the climate emergency declarations is also missing as most did not provide information about what led to their declarations, such as student or staff pressure. This could have provided insights into internal university processes and relationships to supplement what is known about the public-facing side of the declarations. This information may have been challenging to uncover as it would likely have involved needing to directly contact universities, who may not have been willing to share how the declarations came about. However, the wider social context is known, including other instances of declarations from elsewhere.

Chapter 8: Overall discussion and conclusions

Given that four to five years have passed since many UK universities made their climate emergency declarations, it is hoped that these public statements have contributed to climate action in the sector. However, this research did not track universities' policies or actions afterwards, nor undertake further internal research into how universities may have addressed them beyond the individual case study. Undertaking more observational work at different universities could have also uncovered different approaches in how institutions were responding to their declarations. Looking at policy outputs is a different direction that this research could have taken and would mean that post-declaration actions were addressed in greater detail. However, given the lack of research into researchers and climate change, and the importance of culture in shaping action and values, focusing on this core group meant that I was able to uncover novel insights which can contribute towards practical changes in the sector.

While the survey results are representative of researchers in the UK university sector, it may not generalise well to other countries, and though it has addressed a gap in the literature, I recognise that there is a disparity in climate research between the Global North and Global South (Tandon, 2021). Given the large amount of survey data, it was not possible to explore connections between all the questions or how the wide range of responses differed for every professional characteristic. Therefore, there are likely to be some relationships that have not been drawn out from the data – for example, potential differences in incentives for all groups, and potential differences in barriers by subject area. While I chose not to collect demographic data in the survey to ensure anonymity, this does mean that there may be additional insights that were not explored such as whether different barriers or enablers to action are more prominent across different characteristics such as gender, race or disability. This may highlight different actions that need to be taken within universities or research practices that were not found in the survey results.

8.5 Future research

There are several areas that could be explored in future research. Research could track whether universities have followed through on any targets or intended actions that were

Chapter 8: Overall discussion and conclusions

announced in the declarations to demonstrate whether momentum has been maintained or contributed to climate action in the HE sector. As further climate action is taken within universities beyond the declarations and their immediate impacts, research also could monitor this to understand and illuminate how change is able to happen at multiple levels within institutions to share learnings for how to accelerate change. For example, this could be done at universities which are doing particularly well in the People & Planet (2023) University League, through a combination of monitoring universities' policies and interviews with staff.

There are also areas which could be explored specifically relating to researchers. While almost half of researchers do not know how to take climate action in their roles, over a quarter nevertheless think their university's climate action is sufficient with regards to its research activities. The overlap between these was not explored in the analysis but if these do overlap, the reasons are unclear. Further insights would help understand whether they do overlap and if so, why it is that some researchers appear not to feel like they are part of the action universities are taking. Given that medicine, health & life sciences researchers do not think their subject area is as relevant for addressing climate change compared to those in other disciplines, despite this having a clear link to climate change, research could explore why this is and how it could be overcome.

The critical theory which guided this research could also be taken further to more explicitly address elements of power. Lack of agency or power was a key barrier to climate action for researchers, therefore future research could explore how researchers may be able to overcome these issues, such as interviews with those who have had some success at doing this. Future research could also explore whether individuals in positions of senior leadership (such as Vice-Chancellors) are capable of making the transformations required to address climate change in universities or whether they are restricted by reputation, competition and finances (Rickards, Wiseman and Kashima, 2014).

8.6 Implications and impact

Chapter 8: Overall discussion and conclusions

This is the first time that the declarations have been analysed which has implications for those who either want to understand what climate action universities are (saying they are) taking or the role of climate emergency declarations more broadly. The representative UK-wide survey of researchers addresses a particularly important gap in the literature as well as having clear practical implications for researchers themselves and others in the HE sector who are able to enact changes to the culture and practices within universities. The findings allow researchers to gain a greater understanding of what their peers think about climate change, a key aspect given their uncertainty around this in the results. Also, where results show that certain perceptions are widespread or where there are common barriers and ways to overcome them, this can empower researchers to both initiate and push for change. For universities, the insights regarding barriers to and enablers for action should be taken on board to assist researchers in addressing climate change given that they are clearly very concerned about the issue and want to take action. Overall, this research can contribute towards encouraging researchers and universities to take further action on the climate crisis.

Additionally, and as explained in the Introduction (Chapter 1), it was important for this research to have practical impact. The impact relates to the findings themselves but also extends to the dissemination of the work as the findings need to be shared and read in order to be acted upon. Given the live nature of the climate emergency declarations and the current interest in universities and climate action, I made the decision to publish some of the research findings as soon as possible (open access). All statistics below are correct at the time of writing. The journal article *Climate Emergency: UK Universities' Declarations and Their Role in Responding to Climate Change* (Latter and Capstick, 2021) has been viewed almost 6,000 times, downloaded more than 1,100 times and cited 23 times. After publication, I shared this with directly with a small number of individuals and organisations.

The journal article detailing the survey results *Wanting to be part of change but feeling overworked and disempowered: Researchers' perceptions of climate action in UK universities* (Latter, Demski and Capstick, 2024a) has been viewed 2,500 times and garnered attention on social media. I also wrote an article for The Conversation about

Chapter 8: Overall discussion and conclusions

the findings (Latter, 2024) to further increase the reach of the work and offer a more accessible version of the results, which has been viewed almost 8,000 times. I subsequently shared the two published outputs from the survey results (journal article: Latter, Demski and Capstick, 2024a; briefing paper: Latter, Demski and Capstick, 2024b) with a large number of individuals and organisations. This included everyone who offered to share the survey with their university colleagues, the Pro-Vice Chancellor for Research (or equivalent) and sustainability lead at all Universities UK institutions (where this information was available), and approximately 30 organisations in the HE sector. This wide distribution also led to direct conversations or presentations about the findings with organisations in the sector or universities themselves.

Universities have an important role in climate action. The evidence presented in this Thesis reveals how this action can be improved and facilitated so that their declarations can start to transform how they address the climate crisis. Universities and the wider HE sector need to create the culture and conditions for researchers to act as they want to be involved in climate action and comprise a potentially powerful group of actors if their potential can be tapped and barriers overcome.

References

- Abdi, H. (2012) 'Holm's Sequential Bonferroni Procedure', in N. Salkind (ed.) *SAGE Research Methods: Encyclopedia of Research Design*. SAGE Publications, Inc. Available at: <https://doi.org/10.4135/9781412961288>.
- Aberystwyth University (2019) 'Aberystwyth University Declares Climate Emergency and Commits to Reducing Fossil Fuel Investments', *Aberystwyth University*, 25 November. Available at: <https://www.aber.ac.uk/en/news/archive/2019/11/title-227209-en.html> (Accessed: 26 January 2021)
- Achten, W.M.J., Almeida, J. and Muys, B. (2013) 'Carbon footprint of science: More than flying', *Ecological Indicators*, 34, pp. 352–355. Available at: <https://doi.org/10.1016/j.ecolind.2013.05.025>.
- Adams, R., Martin, S. and Boom, K. (2018) 'University culture and sustainability: Designing and implementing an enabling framework', *Journal of Cleaner Production*, 171, pp. 434–445. Available at: <https://doi.org/10.1016/j.jclepro.2017.10.032>.
- Adefila, A. *et al.* (2021) 'Integrating Sustainability-Oriented Ecologies of Practice Across the Learning Cycle: Supporting Transformative Behaviours in Transgenerational, Transnational and Transdisciplinary Spaces', *Discourse and Communication for Sustainable Education*, 12(2), pp. 142–154. Available at: <https://doi.org/10.2478/dcse-2021-0022>.
- Agnew, M. (2012) 'A false dichotomy of serving *either* the local *or* the global community and its impact on internationalisation of the university', *Journal of Higher Education Policy and Management*, 34(5), pp. 473–489. Available at: <https://doi.org/10.1080/1360080X.2012.715997>.
- Aguilar García, C. *et al.* (2023) *Fifth of UK universities' income comes from overseas students, figures show*, *The Guardian*. Available at: <https://www.theguardian.com/education/2023/jul/14/overseas-students-uk-universities-income> (Accessed: 26 October 2023).

References

- Ahmed, S. (2007) “You end up doing the document rather than doing the doing”: Diversity, race equality and the politics of documentation’, *Ethnic and Racial Studies*, 30(4), pp. 590–609. Available at: <https://doi.org/10.1080/01419870701356015>.
- Akenji, L. et al. (2021) *1.5-Degree Lifestyles: Towards A Fair Consumption Space for All*. Berlin: Hot or Cool Institute. Available at: <https://hotorcool.org/1-5-degree-lifestyles-report/> (Accessed: 4 December 2021).
- Alam, S. (2008) ‘Majority World: Challenging the West’s Rhetoric of Democracy’, *Amerasia Journal*, 34(1), pp. 88–98. Available at: <https://doi.org/10.17953/amer.34.1.I3176027k4q614v5>.
- Alkhayyat, Y. et al. (2023) ‘You have declared a climate emergency...now what? Exploring climate action, energy planning and participatory place branding in Canada’, *Urban Resilience and Sustainability*, 1(3), pp. 214–234. Available at: <https://doi.org/10.3934/urs.2023014>.
- ALLEA (2022) ‘Online Panel: Climate Sustainability in the Academic System’. Available at: <https://allea.org/panel-climate-sustainability-in-the-academic-system> (Accessed: 9 February 2022).
- Allen, J. and Rapkins, C. (2022) *Bangor university staff survey: overall report*. DJS Research, Bangor University. Available at: <https://www.bangor.ac.uk/humanresources/staffsurvey2022/staff-survey.php.en> (Accessed: 11 June 2023).
- Allen, M. (2017) ‘Skewness’, in Allen, Mike (ed.) *The SAGE Encyclopedia of Communication Research Methods*. Thousand Oaks: SAGE Publications, Inc. Available at: <https://doi.org/10.4135/9781483381411>.
- Alvesson, M. and Ashcraft, K.L. (2013) ‘Interviews’, in G. Symon and C. Cassell (eds) *Qualitative organizational research: core methods and current challenges*. 2nd edn. London: SAGE, pp. 239–257.

References

- Amaral, A.R. *et al.* (2020) 'A review of empirical data of sustainability initiatives in university campus operations', *Journal of Cleaner Production*, 250, p. 119558. Available at: <https://doi.org/10.1016/j.jclepro.2019.119558>.
- Amber, K.P. *et al.* (2020) 'Energy and environmental performance of a higher education sector – a case study in the United Kingdom', *International Journal of Sustainable Energy*, 39(5), pp. 497–514. Available at: <https://doi.org/10.1080/14786451.2020.1720681>.
- Andre, P. *et al.* (2024) 'Globally representative evidence on the actual and perceived support for climate action', *Nature Climate Change*, 14(3), pp. 253–259. Available at: <https://doi.org/10.1038/s41558-024-01925-3>.
- Artico, D. *et al.* (2023) "'Beyond being analysts of doom": scientists on the frontlines of climate action', *Frontiers in Sustainability*, 4, p. 1155897. Available at: <https://doi.org/10.3389/frsus.2023.1155897>.
- Asayama, S. *et al.* (2019) 'Why setting a climate deadline is dangerous', *Nature Climate Change*, 9(8), pp. 570–572. Available at: <https://doi.org/10.1038/s41558-019-0543-4>.
- Atherton, G., Lewis, J. and Bolton, P. (2023) *Higher education in the UK: Systems, policy approaches, and challenges*. House of Commons Library. Available at: <https://commonslibrary.parliament.uk/research-briefings/cbp-9640/> (Accessed: 18 May 2023).
- Attari, S.Z., Krantz, D.H. and Weber, E.U. (2016) 'Statements about climate researchers' carbon footprints affect their credibility and the impact of their advice', *Climatic Change*, 138(1–2), pp. 325–338. Available at: <https://doi.org/10.1007/s10584-016-1713-2>.
- Attari, S.Z., Krantz, D.H. and Weber, E.U. (2019) 'Climate change communicators' carbon footprints affect their audience's policy support', *Climatic Change*, 154(3–4), pp. 529–545. Available at: <https://doi.org/10.1007/s10584-019-02463-0>.

References

- Avelino, F. (2021) 'Theories of power and social change. Power contestations and their implications for research on social change and innovation', *Journal of Political Power*, 14(3), pp. 425–448. Available at: <https://doi.org/10.1080/2158379X.2021.1875307>.
- Avelino, F. (2017) 'Power in Sustainability Transitions: Analysing power and (dis)empowerment in transformative change towards sustainability', *Environmental Policy and Governance*, 27(6), pp. 505–520. Available at: <https://doi.org/10.1002/eet.1777>.
- Averchenkova, A. *et al.* (2016) 'Multinational and large national corporations and climate adaptation: are we asking the right questions? A review of current knowledge and a new research perspective', *WIREs Climate Change*, 7(4), pp. 517–536. Available at: <https://doi.org/10.1002/wcc.402>.
- Ávila, L.V. *et al.* (2017) 'Barriers to innovation and sustainability at universities around the world', *Journal of Cleaner Production*, 164, pp. 1268–1278. Available at: <https://doi.org/10.1016/j.jclepro.2017.07.025>.
- Badullovich, N. (2022) "'It is a bloody big and responsible job": perspectives on climate change communication from Australia-focused practitioners', *Climate Action*, 1(1), p. 20. Available at: <https://doi.org/10.1007/s44168-022-00021-6>.
- Badullovich, N., Grant, W.J. and Colvin, R.M. (2020) 'Framing climate change for effective communication: a systematic map', *Environmental Research Letters*, 15(12), p. 123002. Available at: <https://doi.org/10.1088/1748-9326/aba4c7>.
- Baeck, P. (2023) *The public want their say on climate action. Is anyone listening?*, *nesta*. Available at: <https://www.nesta.org.uk/blog/the-public-want-their-say-on-climate-action-is-anyone-listening/> (Accessed: 31 January 2024).
- Bailey, M. (2011) 'The Academic as Truth-Teller', in M. Bailey and D. Freedman (eds) *The Assault on Universities: A Manifesto for Resistance*. London: Pluto Press, pp. 91–102.
- Bath Spa University (2020) 'Bath Spa University joins forces with Students' Union to declare climate emergency', *Bath Spa University*, 27 February. Available at:

References

- <https://www.bathspa.ac.uk/news-and-events/news/climate-emergency-declaration/title-81010-en.php> (Accessed: 12 March 2020).
- Bauer, M. *et al.* (2020) 'Interdependencies of Culture and Functions of Sustainability Governance at Higher Education Institutions', *Sustainability*, 12(7), p. 2780. Available at: <https://doi.org/10.3390/su12072780>.
- Bauer, M. *et al.* (2018) 'Sustainability Governance at Universities: Using a Governance Equalizer as a Research Heuristic', *Higher Education Policy*, 31(4), pp. 491–511. Available at: <https://doi.org/10.1057/s41307-018-0104-x>.
- BBC (2019) 'David Attenborough climate change TV show a "call to arms"', *BBC*, 19 April. Available at: <https://www.bbc.co.uk/news/entertainment-arts-47988337> (Accessed: 9 April 2024).
- Beck, A., Sinatra, G.M. and Lombardi, D. (2013) 'Leveraging Higher-Education Instructors in the Climate Literacy Effort: Factors Related to University Faculty's Propensity to Teach Climate Change', *The International Journal of Climate Change: Impacts and Responses*, 4(4), pp. 1–17. Available at: <https://doi.org/10.18848/1835-7156/CGP/v04i04/37181>.
- Bekaroo, G. *et al.* (2019) 'Investigating personal carbon emissions of employees of higher education institutions: Insights from Mauritius', *Journal of Cleaner Production*, 209, pp. 581–594. Available at: <https://doi.org/10.1016/j.jclepro.2018.10.238>.
- Bell, C. (1969) 'A Note on Participant Observation', *Sociology*, 3(3), pp. 417–418. Available at: <https://doi.org/10.1177/003803856900300309>.
- Ben-Nun, P. (2011) 'Respondent Fatigue', in P.J. Lavrakas (ed.) *Encyclopedia of Survey Research Methods*. California: Sage Publications, Inc. Available at: <https://doi.org/10.4135/9781412963947>.
- Bevan, J. *et al.* (2023) 'Planetary health and sustainability teaching in UK medical education: A review of medical school curricula', *Medical Teacher*, 45(6), pp. 623–632. Available at: <https://doi.org/10.1080/0142159X.2022.2152190>.

References

- Bien, C. and Sassen, R. (2020) 'Sensemaking of a sustainability transition by higher education institution leaders', *Journal of Cleaner Production*, 256, p. 120299. Available at: <https://doi.org/10.1016/j.jclepro.2020.120299>.
- Birmingham City University (2019) 'Declaration of Climate Emergency'. Birmingham City University. Available at: <https://bcuassets.blob.core.windows.net/docs/20190920bcuclimateemergencystatement-132235705426425876.pdf> (Accessed: 26 January 2021).
- Birtwistle, T. (2003) 'What is a "university"? (The English Patient)', *Education and the Law*, 15(4), pp. 227–236. Available at: <https://doi.org/10.1080/0953996042000182138>.
- Black Mountains College (n.d.) *Black Mountains College*. Available at: <https://blackmountainscollege.uk> (Accessed: 9 June 2023).
- Blackledge, A. (2012) 'Discourse and power', in J.P. Gee and M. Handford (eds) *The Routledge Handbook of Discourse Analysis*. Oxon: Routledge, pp. 616–627.
- Blanchard, M. *et al.* (2022) 'Concerned yet polluting: A survey on French research personnel and climate change', *PLOS Climate*, 1(9), p. e0000070. Available at: <https://doi.org/10.1371/journal.pclm.0000070>.
- Blanco-Portela, N. *et al.* (2017) 'Towards the integration of sustainability in Higher Education Institutions: A review of drivers of and barriers to organisational change and their comparison against those found of companies', *Journal of Cleaner Production*, 166, pp. 563–578. Available at: <https://doi.org/10.1016/j.jclepro.2017.07.252>.
- Bleiklie, I., Enders, J. and Lepori, B. (2017) *Managing Universities: Policy and Organizational Change from a Western European Comparative Perspective*. Switzerland: Springer Nature.
- Boliver, V. (2015) 'Are there distinctive clusters of higher and lower status universities in the UK?', *Oxford Review of Education*, 41(5), pp. 608–627. Available at: <https://doi.org/10.1080/03054985.2015.1082905>.

References

- Boulton, G. and Lucas, C. (2008) *What are universities for?* Belgium: LERU. Available at: <https://www.leru.org/files/What-are-Universities-for-Full-paper.pdf> (Accessed: 26 July 2023).
- Bourhis, J. (2017) 'Scales, Rank Order', in M. Allen (ed.) *The SAGE Encyclopedia of Communication Research Methods*. 2455 Teller Road, Thousand Oaks California 91320: SAGE Publications, Inc. Available at: <https://doi.org/10.4135/9781483381411>.
- Boykoff, M. *et al.* (2023) 'United Kingdom Newspaper Coverage of Climate Change or Global Warming, 2000-2023. Media and Climate Change Observatory Data Sets.' Cooperative Institute for Research in Environmental Sciences, University of Colorado. Available at: <http://doi.org/10.25810/8196-e820> (Accessed: 20 February 2023).
- Boykoff, M. and Oonk, D. (2020) 'Evaluating the perils and promises of academic climate advocacy', *Climatic Change*, 163(1), pp. 27–41. Available at: <https://doi.org/10.1007/s10584-018-2339-3>.
- Brannan, M.J. and Oultram, T. (2013) 'Participant Observation', in G. Symon and C. Cassell (eds) *Qualitative organizational research: core methods and current challenges*. 2nd edn. London: SAGE, pp. 296–313.
- Bray, L. *et al.* (2023) 'Sustainable healthcare education: A systematic review of the evidence and barriers to inclusion', *Medical Teacher*, 45(2), pp. 157–166. Available at: <https://doi.org/10.1080/0142159X.2022.2110052>.
- Brennan, J., King, R. and Lebeau, Y. (2004) *The role of universities in the transformation of societies: an international research project : synthesis report*. London: Association of Commonwealth Universities and the Centre for Higher Education Research and Information.
- Brew, A. (1999) 'Research and teaching: Changing relationships in a changing context', *Studies in Higher Education*, 24(3), pp. 291–301. Available at: <https://doi.org/10.1080/03075079912331379905>.

References

- Britain Thinks (2018) *Public perceptions of UK universities*. Universities UK. Available at: <https://issuu.com/universitiesuk/docs/public-perceptions-uk-universities-> (Accessed: 18 May 2023).
- Bruno, K., Karliner, J. and Brotsky, C. (1999) *Greenhouse Gangsters vs. Climate Justice*. RAC Transnational Resource and Action Center. Available at: <https://www.corpwatch.org/sites/default/files/Greenhouse%20Gangsters.pdf> (Accessed: 22 February 2023).
- Bryant, M. (2021) 'Majority of universities in UK "not on track to meet emissions targets"', *The Guardian*, 9 December. Available at: <https://www.theguardian.com/education/2021/dec/09/majority-of-universities-in-uk-not-on-track-to-meet-emissions-targets> (Accessed: 9 April 2024).
- Bryman, A. (2016) *Social Research Methods*. 5th edn. Oxford: Oxford University Press.
- Burnes, B., Wend, P. and By, R.T. (2014) 'The changing face of English universities: reinventing collegiality for the twenty-first century', *Studies in Higher Education*, 39(6), pp. 905–926. Available at: <https://doi.org/10.1080/03075079.2012.754858>.
- Burton, D. (2000) 'The Use of Case Studies in Social Science Research', in Burton, D., *Research Training for Social Scientists*. London: SAGE Publications Ltd. Available at: <https://doi.org/10.4135/9780857028051>.
- Caine, S. (1969). *British Universities: Purpose and Prospects*. University of Toronto Press.
- Calderon, A. (2023) 'Sustainability Rankings: What they are About and How to make them Meaningful', *Journal of Studies in International Education*, 27(4), pp. 674–692. Available at: <https://doi.org/10.1177/10283153231172022>.
- Cannon, S. (2023) *From commitment to reality: Delivering ambitious decarbonisation targets in the higher education sector*. ARUP. Available at: <https://www.arup.com/perspectives/publications/research/section/delivering-ambitious-decarbonisation-targets-in-the-higher-education-sector> (Accessed: 9 June 2023).

References

- Canterbury Christ Church University (2019) 'Christ Church Declares a Climate Emergency', *EAUC*, 12 August. Available at: https://www.eauc.org.uk/christ_church_declares_climate_emergency (Accessed: 26 January 2021).
- Capstick, S. *et al.* (2022) 'Civil disobedience by scientists helps press for urgent climate action', *Nature Climate Change*, 12(9), pp. 773–774. Available at: <https://doi.org/10.1038/s41558-022-01461-y>.
- Capstick, S. *et al.* (2019) *Public opinion in a time of climate emergency*. Briefing Paper 02. Centre for Climate Change and Social Transformations. Available at: <https://cast.ac.uk/wp-content/uploads/2020/01/CAST-Briefing-paper-02-Pubic-opinion-in-a-time-of-climate-emergency-min.pdf> (Accessed: 9 April 2024).
- Capstick, S. *et al.* (2021) *Chapter 6. Bridging the gap – the role of equitable low-carbon lifestyles*, *United Nations Environment Programme*. (The Emissions Gap Report). Available at: <https://doi.org/10.18356/9789280738124c010>.
- Carbon Trust (2023) *An introductory guide to Scope 3 emissions*, *Carbon Trust*. Available at: <https://www.carbontrust.com/our-work-and-impact/guides-reports-and-tools/an-introductory-guide-to-scope-3-emissions> (Accessed: 21 November 2023).
- Cardiff University (2019) 'Cardiff University declares climate emergency', *Cardiff University*, 29 November. Available at: <https://www.cardiff.ac.uk/news/view/1730638-cardiff-university-declares-climate-emergency> (Accessed: 12 December 2019).
- Carrington, D. (2023) 'Hundreds of academics call for 100% plant-based meals at UK universities', *The Guardian*, 4 September. Available at: <https://www.theguardian.com/environment/2023/sep/04/hundreds-academics-call-for-meat-free-meals-british-universities> (Accessed: 1 February 2024).
- Carrington, D. (2019, May 17). Why the Guardian is changing the language it uses about the environment. Retrieved from The Guardian website

References

- <https://www.theguardian.com/environment/2019/may/17/why-the-guardian-is-changing-the-language-it-uses-about-the-environment>
- Casci, T. and Adams, E. (2020) 'Setting the right tone', *eLife*, 9, p. e55543. Available at: <https://doi.org/10.7554/eLife.55543>.
- Caset, F., Boussauw, K. and Storme, T. (2018) 'Meet & fly: Sustainable transport academics and the elephant in the room', *Journal of Transport Geography*, 70, pp. 64–67. Available at: <https://doi.org/10.1016/j.jtrangeo.2018.05.020>.
- Casellas Connors, I. and McCoy, H. (2022) 'Performing Anti-racism: Universities Respond to Anti-Black Violence', *Race and Justice*, 12(3), pp. 588–613. Available at: <https://doi.org/10.1177/21533687221101787>.
- Castillo-Montoya, M. (2016) 'Preparing for Interview Research: The Interview Protocol Refinement Framework', *The Qualitative Report* [Preprint]. Available at: <https://doi.org/10.46743/2160-3715/2016.2337>.
- Centre for Climate Change and Social Transformations (CAST) (n.d.) *Our research programme*. Available at: <https://cast.ac.uk/vision-and-core-principles/> (Accessed: 29 October 2023).
- Centre for Climate Safety, cedamia and Vote Climate Australia (2023) 'Climate emergency declarations in 2,351 jurisdictions and local governments cover 1 billion citizens', *Climate Emergency Declaration*, 6 December. Available at: <https://climateemergencydeclaration.org/climate-emergency-declarations-cover-15-million-citizens/> (Accessed: 12 December 2023).
- Centre for Practice Theory (n.d.) *Welcome, Centre for Practice Theory at Lancaster*. Available at: <https://wp.lancs.ac.uk/socialpractice/> (Accessed: 5 November 2023).
- Chapleo, C., Carrillo Durán, M.V. and Castillo Díaz, A. (2011) 'Do UK universities communicate their brands effectively through their websites?', *Journal of Marketing for Higher Education*, 21(1), pp. 25–46. Available at: <https://doi.org/10.1080/08841241.2011.569589>.

References

- Chou, M. (2021) 'Australian local governments and climate emergency declarations: Reviewing local government practice', *Australian Journal of Public Administration*, 80(3), pp. 613–623. Available at: <https://doi.org/10.1111/1467-8500.12451>.
- Chyung, S.Y. *et al.* (2017) 'Evidence-Based Survey Design: The Use of a Midpoint on the Likert Scale', *Performance Improvement*, 56(10), pp. 15–23. Available at: <https://doi.org/10.1002/pfi.21727>.
- Clark, B.R. (1983) *The higher education system: academic organization in cross-national perspective*. Berkeley, CA: University of California Press.
- Climate Change Committee (2024) 'Future emissions targets must not be loosened', *Climate Change Committee*, 28 February. Available at: <https://www.theccc.org.uk/2024/02/28/future-emissions-targets-must-not-be-loosened/> (Accessed: 30 March 2024).
- Climate Change Committee (2023a) *Progress towards reaching Net Zero in the UK*, *Climate Change Committee*. Available at: <https://www.theccc.org.uk/uk-action-on-climate-change/progress-snapshot/> (Accessed: 30 March 2024).
- Climate Change Committee (2019) *Net Zero: The UK's contribution to stopping global warming*. UK: Committee on Climate Change. Available at: <https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/> (Accessed: 4 December 2021).
- Climate Engagement Partnership. (2021) 'Public support majority of net zero policies ... unless there is a personal cost', *Ipsos*, 18 October. Available at: <https://www.ipsos.com/en-uk/public-support-majority-net-zero-policies-unless-there-is-a-personal-cost> (Accessed: 21 February 2023).
- Colbert, M. (2023) 'UK universities take £40m in fossil fuel funding since 2022', *The Guardian*, 4 October. Available at: <https://www.theguardian.com/environment/2023/oct/04/uk-universities-take-41m-in-fossil-fuel-funding-since-2022> (Accessed: 12 December 2023).
- Collini, S. (2012). *What are universities for?*. London: Penguin.

References

- Cologna, V. *et al.* (2021) 'Majority of German citizens, US citizens and climate scientists support policy advocacy by climate researchers and expect greater political engagement', *Environmental Research Letters*, 16(2), p. 024011. Available at: <https://doi.org/10.1088/1748-9326/abd4ac>.
- Covering Climate Now (n.d.) *Homepage*, *Covering Climate Now*. Available at: <https://www.coveringclimatenow.org/> (Accessed: 9 April 2024).
- Cretney, R. and Nissen, S. (2022) 'Emergent Spaces of Emergency Claims: Possibilities and Contestation in a National Climate Emergency Declaration', *Antipode*, 54(5), pp. 1566–1584. Available at: <https://doi.org/10.1111/anti.12843>.
- Dablander, F., Sachisthal, M.S.M. and Haslbeck, J.M.B. (2024) 'Going Beyond Research: Climate Actions by Climate and Non-Climate Researchers'. [Preprint]. Available at: <https://doi.org/10.31234/osf.io/5fqtr>.
- Daddi, T. *et al.* (2018) 'A Systematic Review of the Use of Organization and Management Theories in Climate Change Studies', *Business Strategy and the Environment*, 27(4), pp. 456–474. Available at: <https://doi.org/10.1002/bse.2015>.
- Dasandi, N. *et al.* (2022) 'Positive, global, and health or environment framing bolsters public support for climate policies', *Communications Earth & Environment*, 3(1), p. 239. Available at: <https://doi.org/10.1038/s43247-022-00571-x>.
- Davidson, K. *et al.* (2020) 'The making of a climate emergency response: Examining the attributes of climate emergency plans', *Urban Climate*, 33, p. 100666. Available at: <https://doi.org/10.1016/j.uclim.2020.100666>.
- DeCuir–Gunby, J.T. (2011) 'Mixed Methods Research in the Social Sciences', in *Best Practices in Quantitative Methods*. Thousand Oaks: SAGE Publications, Inc. Available at: <https://doi.org/10.4135/9781412995627> (Accessed: 28 September 2024).
- de Winter, J.F.C. and Dodou, D. (n.d.) 'Five-Point Likert Items: t test versus Mann-Whitney-Wilcoxon (*Addendum added October 2012*)'. Available at: <https://doi.org/10.7275/BJ1P-TS64>.

References

- Deem, R. and Brehony, K.J. (2000) 'Doctoral Students' Access to Research Cultures-are some more unequal than others?', *Studies in Higher Education*, 25(2), pp. 149–165. Available at: <https://doi.org/10.1080/713696138>.
- Deem, R. and Lucas, L. (2007) 'Research and teaching cultures in two contrasting UK policy contexts: Academic life in Education Departments in five English and Scottish universities', *Higher Education*, 54(1), pp. 115–133. Available at: <https://doi.org/10.1007/s10734-006-9010-z>.
- Demski, C., Steentjes, K. and Poortinga, W. (2022) *Public worry about climate change and energy security in the cost-of-living crisis*. 17. Centre for Climate Change and Social Transformations. Available at: <https://cast.ac.uk/publications/briefings/> (Accessed: 21 February 2023).
- Dennis, K. and Urry, J. (2009) *After the car*. Cambridge, UK: Polity Press.
- Department for Business, Energy & Industrial Strategy (2021) *DESNZ Public Attitudes Tracker (March 2021, Wave 37, UK)*, gov.uk. Available at: <https://www.gov.uk/government/collections/public-attitudes-tracking-survey> (Accessed: 14 July 2021).
- Department for Energy Security and Net Zero (2023) *DESNZ Public Attitudes Tracker*, gov.uk. Available at: <https://www.gov.uk/government/collections/public-attitudes-tracking-survey> (Accessed: 1 February 2024).
- Desai, A. and Morley, S. (2022) *How the climate crisis affects internationalisation*. Universities UK International. Available at: <https://www.universitiesuk.ac.uk/universities-uk-international/insights-and-publications/uuki-publications/how-climate-crisis-affects> (Accessed: 30 March 2024).
- Desiere, S. (2016) 'The Carbon Footprint of Academic Conferences: Evidence from the 14th EAAE Congress in Slovenia', *EuroChoices*, 15(2), pp. 56–61. Available at: <https://doi.org/10.1111/1746-692X.12106>.

References

- Dillon, J. (2019). University declarations of environment and climate change emergencies. *Environmental Education Research*, 25(5), 613-614. doi: 10.1080/13504622.2019.1646022
- Duberley, J., Johnson, P. and Cassell, C. (2013) 'Philosophies Underpinning Qualitative Research', in G. Symon and C. Cassell (eds) *Qualitative organizational research: core methods and current challenges*. 2nd edn. London: SAGE, pp. 473–491.
- Dunne, D. (2022) *Analysis: Africa's unreported extreme weather in 2022 and climate change*, *Carbon Brief*. Available at: <https://www.carbonbrief.org/analysis-africas-unreported-extreme-weather-in-2022-and-climate-change/> (Accessed: 21 February 2023).
- Dunne, D. *et al.* (2022) 'Media reaction: UK's record-smashing 40C heatwave and climate change', *Carbon Brief*, 19 July. Available at: <https://www.carbonbrief.org/media-reaction-uks-record-smashing-40c-heatwave-and-climate-change/> (Accessed: 21 February 2023).
- EAUC (n.d.a) *Standardised Carbon Emissions Framework (SCEF)*, *EAUC The Alliance for Sustainability Leadership in Education*. Available at: <https://www.eauc.org.uk/scef> (Accessed: 31 March 2024).
- EAUC (n.d.b) *Climate Commission for UK Higher and Further Education*, *EAUC The Alliance for Sustainability Leadership in Education*. Available at: https://www.eauc.org.uk/climate_commission (Accessed: 28 May 2023).
- EAUC (n.d.c) *Sustainability Commitments*, *EAUC The Alliance for Sustainability Leadership in Education*. Available at: https://www.eauc.org.uk/sustainability_commitments (Accessed: 1 May 2023).
- Edgar, C. and Baeck, P. (2023) *Making democratic innovations stick*. Nesta. Available at: <https://www.nesta.org.uk/report/making-democratic-innovations-stick/> (Accessed: 12 March 2024).
- Ejaz, W., Mukherjee, M. and Fletcher, R. (2023) 'How We Follow Climate Change: Climate News Use and Attitudes in Eight Countries'. Available at:

References

- <https://reutersinstitute.politics.ox.ac.uk/climate-change-news-audiences-analysis-news-use-and-attitudes-eight-countries> (Accessed: 7 January 2024).
- Elliott, A.C. and Woodward, W.A. (2007) 'Nonparametric Analysis Procedures', in Elliott, A. C. and Woodward, W. A., *Statistical Analysis Quick Reference Guidebook*. Thousand Oaks: SAGE Publications, Inc. Available at: <https://doi.org/10.4135/9781412985949>.
- Emms, K. (2022) '30 years on: what do polytechnics teach us about transcending the vocational/ academic divide in today's higher education landscape?', *HEPI*. Available at: <https://www.hepi.ac.uk/2022/12/05/30-years-on-what-do-polytechnics-teach-us-about-transcending-the-vocational-academic-divide-in-todays-higher-education-landscape/> (Accessed: 31 March 2024).
- Environment and Climate Change Committee (2022) *In our hands: behaviour change for climate and environmental goals*. House of Lords. Available at: <https://committees.parliament.uk/committee/515/environment-and-climate-change-committee/news/173479/government-must-support-behaviour-change-to-meet-climate-targets/> (Accessed: 5 March 2023).
- Espinosa, M. *et al.* (2023) 'Perception of climate change in an academic community in Colombia—a pilot study in a developing country', *Discover Sustainability*, 4(1), p. 14. Available at: <https://doi.org/10.1007/s43621-023-00129-7>.
- Evans, L. (2009) 'Developing research capacity in the social sciences: a professionalism based model', *International Journal for Researcher Development*, 1(2), pp. 134–149. Available at: <https://doi.org/10.1108/1759751X201100010>.
- Evans, S. (2021) 'Analysis: Which countries are historically responsible for climate change?', *Carbon Brief*, 5 October. Available at: <https://www.carbonbrief.org/analysis-which-countries-are-historically-responsible-for-climate-change> (Accessed: 4 December 2021).
- Facer, K. (2020) *Beyond business as usual: Higher education in the era of climate change*. Oxford: Higher Education Policy Institute. Available at:

References

- <https://www.hepi.ac.uk/2020/12/10/beyond-business-as-usual-higher-education-in-the-era-of-climate-change/> (Accessed: 10 June 2023).
- Fairclough, N., Mulderrig, J. and Wodak, R. (2013) 'Critical Discourse Analysis', in *Discourse Studies: A Multidisciplinary Introduction*. 2nd edn. London: SAGE Publications Ltd, pp. 357–378. Available at: <https://doi.org/10.4135/9781446289068>.
- Falmouth Packet (2019) 'Falmouth University Declares Climate Emergency', 20 June. Available at: <https://www.falmouthpacket.co.uk/news/17719770.falmouth-university-declares-climate-emergency> (Accessed: 26 January 2021).
- Falmouth University (2019) 'Falmouth University Declares Climate & Ecological Emergency', *Falmouth University*, 20 June. Available at: <https://www.falmouth.ac.uk/news/falmouth-university-declares-climate-ecological-emergency> (Accessed: 5 November 2019).
- Farand, C. (2019) 'Climate emergency declarations spread across UK after Extinction Rebellion', *Climate Home News*, 1 May. Available at: <https://www.climatechangenews.com/2019/05/01/climate-emergency-declarations-spread-across-uk-extinction-rebellion/> (Accessed: 31 January 2024).
- Faulkner, N. (2011) 'What is a University Education for?', in M. Bailey and D. Freedman (eds) *The Assault on Universities: A Manifesto for Resistance*. London: Pluto Press, pp. 27–36.
- Feldman, L. and Hart, P.S. (2021) 'Upping the ante? The effects of "emergency" and "crisis" framing in climate change news', *Climatic Change*, 169(1–2), p. 10. Available at: <https://doi.org/10.1007/s10584-021-03219-5>.
- Fenton, N. (2011) 'Impoverished Pedagogy, Privatised Practice', in M. Bailey and D. Freedman (eds) *The Assault on Universities: A Manifesto for Resistance*. London: Pluto Press, pp. 103–110.
- Ferrari, E. *et al.* (2023) 'Testing an instrument to assess the perception of climate change policies in universities: the case of Salamanca University', *International*

References

- Journal of Sustainability in Higher Education*, 24(1), pp. 160–178. Available at: <https://doi.org/10.1108/IJSHE-09-2021-0379>.
- Field, A.P. (2018) *Discovering statistics using IBM SPSS statistics*. 5th edition. Los Angeles; SAGE.
- Fine, G.A. (2015) 'Participant Observation', in *International Encyclopedia of the Social & Behavioral Sciences*. Elsevier, pp. 530–534. Available at: <https://doi.org/10.1016/B978-0-08-097086-8.44041-9>.
- Finstad, K. (2010) 'Response Interpolation and Scale Sensitivity: Evidence Against 5-Point Scales', *Journal of Usability Studies*, 5(3), pp. 104–110. Available at: https://uxpajournal.org/wp-content/uploads/sites/7/pdf/JUS_Finstad_May_2010.pdf
- Flynn, R., Bellaby, P. and Ricci, M. (2009) 'The "Value-Action Gap" in Public Attitudes towards Sustainable Energy: The Case of Hydrogen Energy', *The Sociological Review*, 57(2_suppl), pp. 159–180. Available at: <https://doi.org/10.1111/j.1467-954X.2010.01891.x>.
- Foote, L., Krogman, N. and Spence, J. (2009) 'Should Academics Advocate on Environmental Issues?', *Society & Natural Resources*, 22(6), pp. 579–589. Available at: <https://doi.org/10.1080/08941920802653257>.
- Fugard, A. and Potts, H., W. (2019) 'Thematic Analysis', in P. Atkinson et al. (eds) *SAGE Research Methods Foundations*. London: SAGE Publications Ltd. Available at: <https://doi.org/10.4135/9781526421036858333>.
- Fullwood, R., Rowley, J. and Delbridge, R. (2013) 'Knowledge sharing amongst academics in UK universities', *Journal of Knowledge Management*, 17(1), pp. 123–136. Available at: <https://doi.org/10.1108/13673271311300831>.
- Gardner, C.J. et al. (2021) 'From Publications to Public Actions: The Role of Universities in Facilitating Academic Advocacy and Activism in the Climate and Ecological Emergency', *Frontiers in Sustainability*, 2, p. 679019. Available at: <https://doi.org/10.3389/frsus.2021.679019>.

References

- Garnett, E.E. and Balmford, A. (2022) 'The vital role of organizations in protecting climate and nature', *Nature Human Behaviour*, 6(3), pp. 319–321. Available at: <https://doi.org/10.1038/s41562-021-01260-z>.
- Gee, J.P. (2014) *An introduction to discourse analysis : theory and method*. 4th edn. England: Routledge.
- Ghag, J. (2019) 'A ticking time bomb? Liverpool declares a climate emergency: What next?', *Environmental Law Review*, 21(3), pp. 169–172. Available at: <https://doi.org/10.1177/1461452919872012>.
- Glover, A., Strengers, Y. and Lewis, T. (2017) 'The unsustainability of academic aeromobility in Australian universities', *Sustainability: Science, Practice and Policy*, 13(1), pp. 1–12. Available at: <https://doi.org/10.1080/15487733.2017.1388620>.
- Goldberg, N. (2022) 'Column: Can scientists moonlight as activists — or does that violate an important ethical code?', *Los Angeles Times*, 17 November. Available at: <https://www.latimes.com/opinion/story/2022-11-17/scientists-activists-climate-change-protests> (Accessed: 2 February 2024).
- Goldsmiths (2019) 'Goldsmiths' New Warden Pledges Action on Climate Emergency', *Goldsmiths*, 12 August. Available at: <https://www.gold.ac.uk/news/carbon-neutral-plan/> (Accessed: 26 January 2021).
- Goodman, S. (2017) 'How to conduct a psychological discourse analysis', *Critical Approaches to Discourse Analysis Across Disciplines*, 9(2), pp. 142–153. Available at: <http://www.lancaster.ac.uk/fass/journals/cadaad/volume-9-2-2017-special-issue-discourse-multidisciplinary-perspectives-on-identity/>.
- Gopalakrishna, G. *et al.* (2022) 'Prevalence of questionable research practices, research misconduct and their potential explanatory factors: A survey among academic researchers in The Netherlands', *PLOS ONE*. Edited by S. Fàbregues, 17(2), p. e0263023. Available at: <https://doi.org/10.1371/journal.pone.0263023>.
- Gore, T., Alestig, M. and Ratcliff, A. (2020) *Confronting Carbon Inequality: Putting climate justice at the heart of the COVID-19 recovery*. Oxfam and Stockholm

References

- Environment Institute. Available at:
<https://www.oxfam.org/en/research/confronting-carbon-inequality> (Accessed: 5 March 2023).
- Gracyalny, M.L. (2018) 'Scales, Likert Statement', in M. Allen (ed.) *The SAGE Encyclopedia of Communication Research Methods*. SAGE Publications, Inc. Available at: <https://doi.org/10.4135/9781483381411>.
- Grant, A. (2019) *Doing Excellent Social Research With Documents*. Great Britain: Routledge.
- Grant, C. (2018) 'Academic flying, climate change, and ethnomusicology: personal reflections on a professional problem', *Ethnomusicology Forum*, 27(2), pp. 123–135. Available at: <https://doi.org/10.1080/17411912.2018.1503063>.
- Grasso, M. and Heede, R. (2023) 'Time to pay the piper: Fossil fuel companies' reparations for climate damages', *One Earth*, 6(5), pp. 459–463. Available at: <https://doi.org/10.1016/j.oneear.2023.04.012>.
- Greenfield, A., Moloney, S. and Granberg, M. (2022) 'Climate Emergencies in Australian Local Governments: From Symbolic Act to Disrupting the Status Quo?', *Climate*, 10(3), p. 38. Available at: <https://doi.org/10.3390/cli10030038>.
- Greenhouse Gas Protocol (n.d.) *Calculation Tools, Greenhouse Gas Protocol*. Available at: <https://ghgprotocol.org/calculation-tools-faq> (Accessed: 21 November 2023).
- Grover, N. (2021) 'UK medical schools must teach about climate crisis, say students', *The Guardian*, 17 August. Available at: <https://www.theguardian.com/environment/2021/aug/17/uk-medical-schools-must-teach-about-climate-change-say-students> (Accessed: 29 May 2023).
- Gudde, P. *et al.* (2021) 'The role of UK local government in delivering on net zero carbon commitments: You've declared a Climate Emergency, so what's the plan?', *Energy Policy*, 154, p. 112245. Available at: <https://doi.org/10.1016/j.enpol.2021.112245>.

References

- Guinness World Records (n.d.) *Oldest higher-learning institution*, Guinness World Records. Available at: <https://www.guinnessworldrecords.com/world-records/oldest-university> (Accessed: 31 January 2024).
- Gupta, D., Shantharam, L. and MacDonald, B.K. (2022) 'Sustainable healthcare in medical education: survey of the student perspectives at a UK medical school', *BMC Medical Education*, 22(1), p. 689. Available at: <https://doi.org/10.1186/s12909-022-03737-5>.
- Guterres, A. (2023) 'Secretary-General's remarks to the Security Council Debate on "Sea-level Rise: Implications for International Peace and Security"'. *Security Council Debate on "Sea-level Rise: Implications for International Peace and Security*, New York, 14 February. Available at: <https://www.un.org/sg/en/content/sg/statement/2023-02-14/secretary-generals-remarks-the-security-council-debate-sea-level-rise-implications-for-international-peace-and-security> (Accessed: 22 February 2023).
- Guthrie, S. *et al.* (2017) *International mobility of researchers: A survey of researchers in the UK*. RAND Europe and the Royal Society, p. 80. Available at: https://www.rand.org/pubs/research_reports/RR1991.html (Accessed: 30 September 2022).
- Hamant, O., Saunders, T. and Viasnoff, V. (2019) 'Celebrate sustainable travel at conferences', *Nature*, 573(7774), pp. 451–452. Available at: <https://doi.org/10.1038/d41586-019-02747-6>.
- Hampton, S. and Whitmarsh, L. (2023) 'Choices for climate action: A review of the multiple roles individuals play', *One Earth*, 6(9), pp. 1157–1172. Available at: <https://doi.org/10.1016/j.oneear.2023.08.006>.
- Harayama, Y. and Carraz, R. (2012) 'Addressing global and social challenges and the role of university', in L.E. Weber and J.J. Duderstadt (eds) *Global Sustainability and the Responsibilities of Universities*. France: Economica Ltd., pp. 85–96.

References

- Harvey-Scholes, C. *et al.* (2023) 'Citizen policy entrepreneurship in UK local government climate emergency declarations', *Review of Policy Research*, 40(6), pp. 950–971. Available at: <https://doi.org/10.1111/ropr.12522>.
- Harvey-Scholes, C. (2019) *Climate Emergency Declarations Accelerating Decarbonisation? What 249 UK examples can tell us.*, IGov. Available at: <https://projects.exeter.ac.uk/igov/new-thinking-climate-emergency-declarations-accelerating-decarbonisation> (Accessed: 10 December 2023).
- Haynes, K. (2013) 'Reflexivity in Qualitative Research', in G. Symon and C. Cassell (eds) *Qualitative organizational research: core methods and current challenges*. 2nd edn. London: SAGE, pp. 72–89.
- HEFCE (2010) *Carbon Reduction Target and Strategy for Higher Education in England*. Bristol, UK: HEFCE.
- Henman, J., Shabb, K. and McCormick, K. (2023) 'Slow Emergency but Urgent Action? Exploring the impact of municipal climate emergency statements in Sweden', *Urban Climate*, 49, p. 101575. Available at: <https://doi.org/10.1016/j.uclim.2023.101575>.
- Hennink, M.M., Hutter, I. and Bailey, A. (2020) *Qualitative research methods*. 2nd edn. Los Angeles ; SAGE Publications.
- HESA (2021) *What areas do they work in?*, HESA. Available at: <https://www.hesa.ac.uk/data-and-analysis/staff/areas> (Accessed: 30 September 2022).
- HESA (2022a) *Who's studying in HE?*, HESA. Available at: <https://www.hesa.ac.uk/data-and-analysis/students/whos-in-he> (Accessed: 30 September 2022).
- HESA (2022b) *Who's working in HE?*, HESA. Available at: <https://www.hesa.ac.uk/data-and-analysis/staff/working-in-he> (Accessed: 30 September 2022).
- Higham, J. and Font, X. (2020) 'Decarbonising academia: confronting our climate hypocrisy', *Journal of Sustainable Tourism*, 28(1), pp. 1–9. Available at: <https://doi.org/10.1080/09669582.2019.1695132>.

References

- Higher Education Policy Institute *et al.* (2023) *The benefits and costs of international higher education students to the UK economy*. United Kingdom: Higher Education Policy Institute. Available at: <https://www.hepi.ac.uk/wp-content/uploads/2023/05/Summary-Report-Benefits-and-costs-of-international-students.pdf> (Accessed: 30 March 2024).
- Hindley, A. (2022) 'Understanding the Gap between University Ambitions to Teach and Deliver Climate Change Education', *Sustainability*, 14(21), p. 13823. Available at: <https://doi.org/10.3390/su142113823>.
- Hogan, J. (2012) 'Restructuring revisited: Changing academic structures in UK universities', *Perspectives: Policy and Practice in Higher Education*, pp. 1–7. Available at: <https://doi.org/10.1080/13603108.2012.673510>.
- Holbrook, A. (2011) 'Don't Knows (DKs)', in P. Lavrakas (ed.) *Encyclopedia of Survey Research Methods*. California: Sage Publications, Inc. Available at: <https://doi.org/10.4135/9781412963947>.
- Holt, R. (2013) 'Ethical Research Practice', in G. Symon and C. Cassell (eds) *Qualitative organizational research: core methods and current challenges*. 2nd edn. London: SAGE, pp. 90–108.
- Hoolohan, C. *et al.* (2021) 'Responding to the climate emergency: how are UK universities establishing sustainable workplace routines for flying and food?', *Climate Policy*, 21(7), pp. 853–867. Available at: <https://doi.org/10.1080/14693062.2021.1881426>.
- Hoover, E. and Harder, M.K. (2015) 'What lies beneath the surface? The hidden complexities of organizational change for sustainability in higher education', *Journal of Cleaner Production*, 106, pp. 175–188. Available at: <https://doi.org/10.1016/j.jclepro.2014.01.081>.
- Hopkins, D. *et al.* (2016) 'Academic mobility in the Anthropocene era: a comparative study of university policy at three New Zealand institutions', *Journal of Sustainable Tourism*, 24(3), pp. 376–397. Available at: <https://doi.org/10.1080/09669582.2015.1071383>.

References

- Howarth, C. *et al.* (2023) *Enabling place-based climate action in the UK: The PCAN experience*. United Kingdom: Place-based Climate Action Network. Available at: <https://pcancities.org.uk/sites/default/files/Enabling%20Place-based%20Climate%20Action%20in%20the%20UK%20-%20The%20PCAN%20Experience.pdf> (Accessed: 2 January 2024).
- Huisman, J. and Mampaey, J. (2018) 'Use your imagination: what UK universities want you to think of them', *Oxford Review of Education*, 44(4), pp. 425–440. Available at: <https://doi.org/10.1080/03054985.2017.1421154>.
- Huxley, K. (2020) 'Data Cleaning', in *SAGE Research Methods Foundations*. United Kingdom: SAGE Publications Ltd. Available at: <https://doi.org/10.4135/9781526421036842861>.
- IPCC (2023) 'Summary for Policymakers', in H. Lee and J. Romero (eds) *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Geneva, Switzerland: IPCC, pp. 1–34. Available at: [10.59327/IPCC/AR6-9789291691647.001](https://www.ipcc.ch/report/ar6/synergy-report/).
- IPCC (2021) *Climate change widespread, rapid, and intensifying – IPCC, IPCC*. Available at: <https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/> (Accessed: 21 February 2023).
- IPCC (2018) 'Summary for Policymakers', in V. Masson-Delmotte *et al.* (eds) *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. Cambridge, UK and New York, NY, USA: Cambridge University Press, pp. 3–24. Available at: <https://doi.org/10.1017/9781009157940.001>.
- IPCC (n.d.) *About the IPCC, IPCC*. Available at: <https://www.ipcc.ch/about/> (Accessed: 1 April 2024).

References

- Ipsos (2023) *Ipsos Veracity Index 2023: Trust in professions survey*. Ipsos. Available at: <https://www.ipsos.com/sites/default/files/ct/news/documents/2023-12/ipsos-trust-in-professions-veracity-index-2023-charts.pdf> (Accessed: 1 February 2024).
- Ipsos (2021) *Perils of Perception: Environmental Perils*. Ipsos. Available at: <https://www.ipsos.com/en/ipsos-perils-perception-climate-change> (Accessed: 26 February 2023).
- Ipsos (2020) 'Two thirds of Britons believe Climate Change as serious as Coronavirus and majority want Climate prioritised in economic recovery', *Ipsos*, 22 April. Available at: <https://www.ipsos.com/ipsos-mori/en-uk/two-thirds-britons-believe-climate-change-serious-coronavirus-and-majority-want-climate-prioritised> (Accessed: 9 April 2024).
- Ipsos and Centre for Climate Change and Social Transformations (2022) *Net Zero Living*. Ipsos. Available at: <https://www.ipsos.com/en-uk/new-report-examines-peoples-attitudes-towards-climate-change-and-how-they-translate-action> (Accessed: 27 February 2023).
- Ipsos and Centre for Climate Change and Social Transformations (2021) 'Public support majority of net zero policies...unless there is a personal cost', 18 October. Available at: <https://www.ipsos.com/en-uk/public-support-majority-net-zero-policies-unless-there-is-a-personal-cost> (Accessed: 7 January 2024).
- Jamdar, S. *et al.* (n.d.) *Building a green campus: What's stopping institutions?* Shakespeare Martineau. Available at: <https://www.shma.co.uk/market-expertise/education/green-campus/> (Accessed: 1 July 2023).
- Jenkins, K.E.H. *et al.* (2020) 'Towards impactful energy justice research: Transforming the power of academic engagement', *Energy Research & Social Science*, 67, p. 101510. Available at: <https://doi.org/10.1016/j.erss.2020.101510>.
- Johnson, A.E. (2022) *How to Find Joy in Climate Action*. Available at: <https://www.youtube.com/watch?v=VsOJR40M0as> (Accessed: 28 September 2022).

References

- Jorgensen, D. (1989) 'The Methodology of Participant Observation', in Jorgensen, D., *Participant Observation*. California: SAGE Publications, Inc. Available at: <https://doi.org/10.4135/9781412985376>.
- Harayama, Y. and Carraz, R. (2012) 'A University Culture of Sustainability: Principle, Practice and Economic Driver', in L.E. Weber and J.J. Duderstadt (eds) *Global Sustainability and the Responsibilities of Universities*. France: Economica Ltd., pp. 117–128.
- Keele University (2019) 'Working towards a sustainable future', *Keele University*, 24 July. Available at: <https://blogs.keele.ac.uk/working-towards-a-sustainable-future-92e901c6d9a> (Accessed: 16 November 2019).
- Kenealy, G.J.J. (2013) 'Grounded Theory: A Theory Building Approach', in G. Symon and C. Cassell (eds) *Qualitative organizational research: core methods and current challenges*. 2nd edn. London: SAGE, pp. 408–425.
- Kim, T. (2008) 'Changing university governance and management in the UK and elsewhere under market conditions: Issues of quality assurance and accountability', *Intellectual Economics (Intelektine Ekonomika)*, 2(4), pp. 33–42.
- King, N. (n.d.) *Template Analysis, University of Huddersfield Research*. Available at: <https://research.hud.ac.uk/research-subjects/human-health/template-analysis/> (Accessed: 28 September 2023).
- King, N. (2013) 'Doing Template Analysis', in G. Symon and C. Cassell (eds) *Qualitative organizational research: core methods and current challenges*. 2nd edn. London: SAGE, pp. 426–450.
- Kotcher, J. *et al.* (2021) 'Views of health professionals on climate change and health: a multinational survey study', *The Lancet Planetary Health*, 5(5), pp. e316–e323. Available at: [https://doi.org/10.1016/S2542-5196\(21\)00053-X](https://doi.org/10.1016/S2542-5196(21)00053-X).
- Kotter, J.P. (2012) *Leading change*. Boston, Mass.: Harvard Business Review Press.
- Kotter, J.P. and Heskett, J.L. (1992) *Corporate Culture and Performance*. 1st edn. New York: The Free Press.

References

- Krause, K.-L.D. (2022) 'Vectors of change in higher education curricula', *Journal of Curriculum Studies*, 54(1), pp. 38–52. Available at: <https://doi.org/10.1080/00220272.2020.1764627>.
- Kuramochi, T. *et al.* (2020) 'Beyond national climate action: the impact of region, city, and business commitments on global greenhouse gas emissions', *Climate Policy*, 20(3), pp. 275–291. Available at: <https://doi.org/10.1080/14693062.2020.1740150>.
- Kwai, I. (2021) 'Sydney to Declare a Climate Emergency in Face of National Inaction', *New York Times*, 21 June. Available at: <https://www.nytimes.com/2019/06/21/world/australia/sydney-climate-emergency.html> (Accessed: 9 April 2024).
- Laerd Statistics (n.d.) *Kruskal-Wallis H Test using SPSS Statistics*, Laerd Statistics. Available at: <https://statistics.laerd.com/spss-tutorials/kruskal-wallis-h-test-using-spss-statistics.php> (Accessed: 2 February 2023).
- Lamb, W.F. *et al.* (2020) 'Discourses of climate delay', *Global Sustainability*, 3, p. e17. Available at: <https://doi.org/10.1017/sus.2020.13>.
- Lancaster University (n.d.) *Sustainability resources*, Lancaster University. Available at: <https://www.lancaster.ac.uk/sustainability/sustainability-resources/> (Accessed: 29 March 2024).
- Lancet Countdown (2019) *Lancet Countdown: Tackling Progress on Health and Climate Change*, Lancet Countdown. Available at: <https://www.lancetcountdown.org> (Accessed: 26 July 2023).
- Latter, B. (2024) 'Climate change: university researchers feel powerless to take action – survey', 30 January. Available at: <https://theconversation.com/climate-change-university-researchers-feel-powerless-to-take-action-survey-221830> (Accessed: 30 January 2024).
- Latter, B., Demski, C. and Capstick, S. (2024a) 'Wanting to be part of change but feeling overworked and disempowered: Researchers' perceptions of climate

References

- action in UK universities', *PLOS Climate*, 3(1), p. e0000322. Available at: <https://doi.org/10.1371/journal.pclm.0000322>.
- Latter, B., Demski, C. and Capstick, S. (2024b) *Academic researchers' perceptions of climate action in UK universities: A briefing for the university sector*. CAST Briefing Paper 22. Centre for Climate Change and Social Transformations. Available at: <https://cast.ac.uk/wp-content/uploads/2024/01/cast-the-centre-for-climate-change-and-social-transformations-cast-briefing-22-academic-researchers-perceptions-of-climate-action-in-UK-universities.pdf> (Accessed: 16 March 2024).
- Latter, B. and Capstick, S. (2021) 'Climate Emergency: UK Universities' Declarations and Their Role in Responding to Climate Change', *Frontiers in Sustainability*, 2, p. 660596. Available at: <https://doi.org/10.3389/frsus.2021.660596>.
- Le Quéré, C. *et al.* (2015) *Towards a culture of low-carbon research for the 21st Century*. Tyndall Centre for Climate Change Research. Available at: <https://tyndall.ac.uk/working-papers/towards-a-culture-of-low-carbon-research-for-the-21st-century/> (Accessed: 26 July 2023).
- Leal Filho, W. *et al.* (2023) 'An assessment of attitudes and perceptions of international university students on climate change', *Climate Risk Management*, 39, p. 100486. Available at: <https://doi.org/10.1016/j.crm.2023.100486>.
- Leal Filho, W. *et al.* (2021) 'Handling climate change education at universities: an overview', *Environmental Sciences Europe*, 33(1), p. 109. Available at: <https://doi.org/10.1186/s12302-021-00552-5>.
- Leal Filho, W. *et al.* (2019) 'Climate Change Scepticism at Universities: A Global Study', *Sustainability*, 11(10), p. 2981. Available at: <https://doi.org/10.3390/su11102981>.
- Leal Filho, W. *et al.* (2018) 'Implementing climate change research at universities: Barriers, potential and actions', *Journal of Cleaner Production*, 170, pp. 269–277. Available at: <https://doi.org/10.1016/j.jclepro.2017.09.105>.

References

- Leal Filho, W. *et al.* (2017) 'Identifying and overcoming obstacles to the implementation of sustainable development at universities', *Journal of Integrative Environmental Sciences*, 14(1), pp. 93–108. Available at: <https://doi.org/10.1080/1943815X.2017.1362007>.
- Leichenko, R., Gram-Hanssen, I. and O'Brien, K. (2022) 'Teaching the "how" of transformation', *Sustainability Science*, 17(2), pp. 573–584. Available at: <https://doi.org/10.1007/s11625-021-00964-5>.
- Levers, M.-J.D. (2013) 'Philosophical Paradigms, Grounded Theory, and Perspectives on Emergence', *SAGE Open*, 3(4), p. 215824401351724. Available at: <https://doi.org/10.1177/2158244013517243>.
- Lieber, E. and Weisner, T.S. (2010) 'Meeting the practical challenges of mixed methods research', in A. Tashakkori and C. Teddlie (eds) *SAGE Handbook of Mixed Methods in Social & Behavioral Research*. 2nd edn. United States: SAGE Publications, Inc., pp. 559–580. Available at: <https://doi.org/10.4135/9781506335193>.
- Littlewood, D. *et al.* (2018) 'Examining the drivers and outcomes of corporate commitment to climate change action in European high emitting industry', *Business Strategy and the Environment*, 27(8), pp. 1437–1449. Available at: <https://doi.org/10.1002/bse.2194>.
- Liverpool John Moores University (2020) 'LJMU declares climate emergency', *Liverpool John Moores University*, 7 February. Available at: <https://www.ljmu.ac.uk/about-us/news/articles/2020/2/7/ljmu-declares-climate-emergency> (Accessed: 20 February 2020).
- Livesey, D. (2008) 'Putting the Idea of the Research-Driven or Research-Intensive University in Europe in its Context', *European Educational Research Journal*, 7(4), pp. 425–432. Available at: <https://doi.org/10.2304/eeerj.2008.7.4.425>.
- Lozano, R. *et al.* (2015) 'A review of commitment and implementation of sustainable development in higher education: results from a worldwide survey', *Journal of*

References

- Cleaner Production*, 108, pp. 1–18. Available at:
<https://doi.org/10.1016/j.jclepro.2014.09.048>.
- Lumina, I. *et al.* (n.d.) *Research for a Future*. Faculty for a Future. Available at:
<https://facultyforafuture.org/research> (Accessed: 25 June 2023).
- Manchester Metropolitan University (2020) *Students, Staff and Sustainability*.
Manchester Metropolitan University. Available at:
<https://www.mmu.ac.uk/sustainability/news-and-events/news/story/?id=12543>
(Accessed: 10 June 2023).
- Marix Evans, L. (2020) *Local Authorities and the Sixth Carbon Budget*. United Kingdom:
Climate Change Committee. Available at:
<https://www.theccc.org.uk/publication/local-authorities-and-the-sixth-carbon-budget/> (Accessed: 17 February 2024).
- Mayo, N. (2019) *How green is my university?*, *Times Higher Education*. Available at:
<https://www.timeshighereducation.com/features/how-green-my-university>
(Accessed: 9 April 2024).
- Mazhar, M.U., Bull, R. and Lemon, M. (2017) 'Critical success factors for embedding carbon management in organizations: lessons from the UK higher education sector', *Carbon Management*, 8(5–6), pp. 379–392. Available at:
<https://doi.org/10.1080/17583004.2017.1386533>.
- McCowan, T. (2023) 'Internationalisation and Climate Impacts of Higher Education: Towards an Analytical Framework', *Journal of Studies in International Education*, p. 102831532311648. Available at:
<https://doi.org/10.1177/10283153231164843>.
- McCowan, T. (2020) *The impact of universities on climate change: a theoretical framework*. Centre for Global Higher Education. Available at:
<https://www.researchcghe.org/perch/resources/publications/final-working-paper-55.pdf> (Accessed: 30 September 2022).
- McCowan, T., Leal Filho, W. and Brandli, L. (eds) (2021) *Universities facing Climate Change and Sustainability*. Hamburg: Körber-Stiftung. Available at:

References

- https://discovery.ucl.ac.uk/id/eprint/10142640/1/GUC%20Study_Universities%20facing%20Climate%20Change%20and%20Sustainability.pdf (Accessed: 10 June 2023).
- McGeown, C. and Barry, J. (2023) 'Agents of (un)sustainability: democratising universities for the planetary crisis', *Frontiers in Sustainability*, 4, p. 1166642. Available at: <https://doi.org/10.3389/frsus.2023.1166642>.
- McHugh, L.H., Lemos, M.C. and Morrison, T.H. (2021) 'Risk? Crisis? Emergency? Implications of the new climate emergency framing for governance and policy', *WIREs Climate Change*, 12(6). Available at: <https://doi.org/10.1002/wcc.736>.
- McKeever, B.W. *et al.* (2023) 'From Advocacy to Activism: A Multi-Dimensional Scale of Communicative, Collective, and Combative Behaviors', *Journalism & Mass Communication Quarterly*, p. 107769902311610. Available at: <https://doi.org/10.1177/10776990231161035>.
- McSweeney, R. (2015) 'Analysis: The most "cited" climate change papers', *Carbon Brief*, 8 July. Available at: <https://www.carbonbrief.org/analysis-the-most-cited-climate-change-papers> (Accessed: 9 April 2024).
- Miles, B. (2012) 'Discourse Analysis', in N. Salkind J. (ed.) *Encyclopedia of Research Design*. United States: SAGE Publications, Inc. Available at: <https://doi.org/10.4135/9781412961288>.
- Mocatta, G. and White, R. (2023) 'Universities as Exemplars of Climate Action', in K. Beasy, C. Smith, and J. Watson (eds) *Education and the UN Sustainable Development Goals*. Singapore: Springer Nature Singapore (Education for Sustainability), pp. 279–294. Available at: https://doi.org/10.1007/978-981-99-3802-5_16.
- Moore, B. *et al.* (2021) 'Transformations for climate change mitigation: A systematic review of terminology, concepts, and characteristics', *WIREs Climate Change*, 12(6), p. e738. Available at: <https://doi.org/10.1002/wcc.738>.

References

- Mumby, D. and Stohl, C. (1991) 'Power and Discourse in Organization Studies: Absence and the Dialectic of Control', *Discourse & Society*, 2(3), pp. 313–332. Available at: <https://doi.org/10.1177/0957926591002003004>.
- Nanna, M.J. and Sawilowsky, S.S. (1998) 'Analysis of Likert Scale Data in Disability and Medical Rehabilitation Research', *Psychological Methods*, 3(1), pp. 55–67. Available at: <https://psycnet.apa.org/doi/10.1037/1082-989X.3.1.55>.
- Nejati, M. *et al.* (2011) 'Corporate social responsibility and universities: A study of top 10 world universities' websites', *African Journal of Business Management*, 5(2), pp. 440–447. Available at: https://www.researchgate.net/publication/228469287_Corporate_social_responsibility_and_universities_A_study_of_top_10_world_universities'_websites.
- Nelson, M.P. and Vucetich, J.A. (2009) 'On Advocacy by Environmental Scientists: What, Whether, Why, and How', *Conservation Biology*, 23(5), pp. 1090–1101. Available at: <https://doi.org/10.1111/j.1523-1739.2009.01250.x>.
- Newman, J. (1996) *The Idea of a University*. New Haven: Yale University Press.
- Newman, N. (2023) *Journalism, Media, and Technology Trends and Predictions 2023*. Reuters Institute for the Study of Journalism. Available at: <https://reutersinstitute.politics.ox.ac.uk/journalism-media-and-technology-trends-and-predictions-2023> (Accessed: 20 February 2023).
- Niedlich, S. *et al.* (2020) 'Cultures of sustainability governance in higher education institutions: A multi-case study of dimensions and implications', *Higher Education Quarterly*, 74(4), pp. 373–390. Available at: <https://doi.org/10.1111/hequ.12237>.
- Niedlich, S. *et al.* (2019) 'Cultures of sustainability governance in higher education institutions: A multi-case study of dimensions and implications', *Higher Education Quarterly*, 74(4), pp. 373–390. Available at: <https://doi.org/10.1111/hequ.12237>.
- Nielsen, K.S. *et al.* (2024) 'Realizing the full potential of behavioural science for climate change mitigation', *Nature Climate Change* [Preprint]. Available at: <https://doi.org/10.1038/s41558-024-01951-1>.

References

- Nussey, C. *et al.* (2023) *How are universities responding to the challenges of the climate crisis? A systematic review of literature*. Working Paper Series 14. Transforming Universities for a Changing Climate. Available at: <http://www.climate-uni.com>.
- Nussey, C. *et al.* (2022) 'Building University Capabilities to Respond to Climate Change Through Participatory Action Research: Towards a Comparative Analytical Framework', *Journal of Human Development and Capabilities*, 23(1), pp. 95–115. Available at: <https://doi.org/10.1080/19452829.2021.2014427>.
- O'Leary, S. *et al.* (2023) 'Management actions to address the climate emergency: Motivations and barriers for SMEs and other societal micro/meso-level groups', *The International Journal of Management Education*, 21(3), p. 100831. Available at: <https://doi.org/10.1016/j.ijme.2023.100831>.
- O'Neill, K. and Sinden, C. (2021) 'Universities, Sustainability, and Neoliberalism: Contradictions of the Climate Emergency Declarations', *Politics and Governance*, 9(2), pp. 29–40. Available at: <https://doi.org/10.17645/pag.v9i2.3872>.
- Office for National Statistics (2023a) *Public opinions and social trends, Great Britain: 25 January to 5 February 2023*, Office for National Statistics. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/bulletins/publicopinionsandsocialtrendsgreatbritain/25januaryto5february2023> (Accessed: 21 February 2023).
- Office for National Statistics (2023b) *Climate change insights, business and transport, UK: February 2023*, Office for National Statistics. Available at: <https://www.ons.gov.uk/economy/environmentalaccounts/articles/climatechangeinsightsuk/february2023> (Accessed: 21 February 2023).
- Okereke, C. (2007) 'An Exploration of Motivations, Drivers and Barriers to Carbon Management', *European Management Journal*, 25(6), pp. 475–486. Available at: <https://doi.org/10.1016/j.emj.2007.08.002>.

References

- Osaka, S. (2023) *Why many scientists are now saying climate change is an all-out 'emergency'*, *The Washington Post*. Available at: <https://www.washingtonpost.com/climate-environment/2023/10/30/climate-emergency-scientists-declaration/> (Accessed: 10 December 2023).
- Osborne, J.L. *et al.* (2019) *Environment and Climate Emergency Working Group White Paper*. Exeter: University of Exeter. Available at: https://www.exeter.ac.uk/media/universityofexeter/campusservices/sustainability/climateemergency/documents/Full-EnvClimE-White-Paper-11_11_19.pdf (Accessed: 2 September 2023).
- Oswick, C. (2013) 'Discourse Analysis and Discursive Research', in G. Symon and C. Cassell (eds) *Qualitative organizational research: core methods and current challenges*. 2nd edn. London: SAGE, pp. 473–491.
- Overland, I. *et al.* (2022) 'Funding flows for climate change research on Africa: where do they come from and where do they go?', *Climate and Development*, 14(8), pp. 705–724. Available at: <https://doi.org/10.1080/17565529.2021.1976609>.
- Owen-Smith, T. (2023) *Integrating climate into strategy and planning in universities: Where are we? Where are we going?* Higher Education Strategic Planners Association; SUMS. Available at: <https://sums.org.uk/integrating-climate-into-strategy-and-planning-where-are-we-where-are-we-going/> (Accessed: 19 December 2023).
- Owens, J. *et al.* (2023) 'Conceptualising HE educators' capabilities to teach the crisis: towards critical and transformative environmental pedagogies', *Frontiers in Education*, 8, p. 1193498. Available at: <https://doi.org/10.3389/educ.2023.1193498>.
- Oxford Economics (2017) *The economic impact of universities in 2014-15: Report for Universities UK*. Oxford Economics. Available at: <https://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2017/the-economic-impact-of-universities.pdf> (Accessed: 9 April 2024).

References

- Oxford University Press (2019) *Word of the Year 2019*, *Oxford Languages*. Available at: <https://languages.oup.com/word-of-the-year/word-of-the-year-2019> (Accessed: 9 April 2024).
- Parsons, E.C.M. (2016) “‘Advocacy’ and ‘Activism’ Are Not Dirty Words—How Activists Can Better Help Conservation Scientists”, *Frontiers in Marine Science*, 3. Available at: <https://doi.org/10.3389/fmars.2016.00229>.
- Pearce, W. *et al.* (2015) ‘Communicating climate change: conduits, content, and consensus’, *WIREs Climate Change*, 6(6), pp. 613–626. Available at: <https://doi.org/10.1002/wcc.366>.
- People & Planet (2023) *Press release 2023/2024*, *People & Planet*. Available at: <https://peopleandplanet.org/university-league/2023-24-press-release> (Accessed: 13 December 2023).
- People & Planet (2022) *Cardiff Metropolitan University Tops Ranking of 153 UK Universities by Sustainability and Ethics Criteria*, *People & Planet*. Available at: <https://peopleandplanet.org/blog/2022-12-06/press-release-cardiff-metropolitan-university-tops-ranking-153-uk-universities> (Accessed: 06/01/2024).
- People & Planet (2021) *Our history*, *People & Planet*. Available at: <https://peopleandplanet.org/about/history> (Accessed: 24 March 2024).
- People & Planet. (2019). *People & Planet University League*. Available at: <https://peopleandplanet.org/university-league> (Accessed 26 January 2021).
- People & Planet (n.d.) *Fossil Free*. Available at: <https://peopleandplanet.org/fossil-free> (Accessed: 1 April 2024).
- Phillips, D. *et al.* (2018) *British Social Attitudes: The 35th Report*. London: The National Centre for Social Research, p. 27. Available at: https://www.bsa.natcen.ac.uk/media/39251/bsa35_climate_change.pdf (Accessed: 30 September 2022).
- Pollack, J. and Pollack, R. (2015) ‘Using Kotter’s Eight Stage Process to Manage an Organisational Change Program: Presentation and Practice’, *Systemic Practice*

References

- and Action Research*, 28(1), pp. 51–66. Available at:
<https://doi.org/10.1007/s11213-014-9317-0>.
- Prasad, P. and Caproni, P. (1997) 'Critical Theory in the Management Classroom: Engaging Power, Ideology, and Praxis', *Journal Of Management Education*, 21(3), pp. 284–291. Available at:
<https://doi.org/10.1177/105256299702100302>.
- Price, E.A.C. *et al.* (2021) 'Supporting the role of universities in leading individual and societal transformation through education for sustainable development', *Discover Sustainability*, 2(1), p. 49. Available at: <https://doi.org/10.1007/s43621-021-00058-3>.
- Priestley Centre for Climate Futures (2023) *Analysis reveals scale of tertiary education's carbon emissions*, University of Leeds. Available at:
<https://climate.leeds.ac.uk/news/analysis-reveals-scale-of-tertiary-educations-carbon-emissions/> (Accessed: 26 October 2023).
- Project Drawdown (n.d.) *Job function action guides*, Project Drawdown. Available at:
<https://drawdown.org/programs/drawdown-labs/job-function-action-guides>
(Accessed: 12 March 2024).
- Qualtrics (2022) *Sample size calculator & complete guide*, Qualtrics. Available at:
<https://www.qualtrics.com/blog/calculating-sample-size/> (Accessed: 5 February 2023).
- Rahi, S. (2017) 'Research Design and Methods: A Systematic Review of Research Paradigms, Sampling Issues and Instruments Development', *International Journal of Economics & Management Sciences*, 06(02). Available at:
<https://doi.org/10.4172/2162-6359.1000403>.
- Ralph, M. and Stubbs, W. (2014) 'Integrating environmental sustainability into universities', *Higher Education*, 67(1), pp. 71–90. Available at:
<https://doi.org/10.1007/s10734-013-9641-9>.
- Raworth, K. (2018) *Doughnut Economics : Seven Ways to Think Like a 21st-Century Economist*. London: Cornerstone.

References

- Renouf, J.S. *et al.* (2019) 'Why universities need to declare an ecological and climate emergency', *Times Higher Education*, 27 September. Available at: <https://www.timeshighereducation.com/blog/why-universities-need-declare-ecological-and-climate-emergency> (Accessed: 9 April 2024).
- Richards, K. *et al.* (2023) 'Diversity and inclusion in UK Higher Education: staff perspectives on institutional representations and their reality', *Research in Post-Compulsory Education*, 28(4), pp. 647–669. Available at: <https://doi.org/10.1080/13596748.2023.2253654>.
- Rickards, L., Wiseman, J. and Kashima, Y. (2014) 'Barriers to effective climate change mitigation: the case of senior government and business decision makers', *WIREs Climate Change*, 5(6), pp. 753–773. Available at: <https://doi.org/10.1002/wcc.305>.
- Ripple, W.J. *et al.* (2019) 'World Scientists' Warning of a Climate Emergency', *Bioscience*, (biz088), pp. 1–5. Available at: <https://doi.org/10.1093/biosci/biz088>.
- Ritchie, H., Roser, M. and Rosado, P. (2020) *CO₂ and Greenhouse Gas Emissions, Our World In Data*. Available at: <https://ourworldindata.org/emissions-by-sector> (Accessed: 22 February 2023).
- Roberts, R. (2020) 'Qualitative Interview Questions: Guidance for Novice Researchers', *The Qualitative Report* [Preprint]. Available at: <https://doi.org/10.46743/2160-3715/2020.4640>.
- Rolleston, C. *et al.* (2023) 'Aiming Higher? Implications for Higher Education of Students' Views on Education for Climate Justice', *Sustainability*, 15(19), p. 14473. Available at: <https://doi.org/10.3390/su151914473>.
- The Royal Society (n.d.) *Research culture, The Royal Society*. Available at: <https://royalsociety.org/news-resources/projects/research-culture/> (Accessed: 30 August 2024).
- Rubin, M. and Donkin, C. (2022) 'Exploratory hypothesis tests can be more compelling than confirmatory hypothesis tests', *Philosophical Psychology*, pp. 1–29. Available at: <https://doi.org/10.1080/09515089.2022.2113771>.

References

- Ruiz-Campillo, X., Castán Broto, V. and Westman, L. (2021) 'Motivations and Intended Outcomes in Local Governments' Declarations of Climate Emergency', *Politics and Governance*, 9(2), pp. 17–28. Available at: <https://doi.org/10.17645/pag.v9i2.3755>.
- Russell Group (n.d.) *Our universities*, Russell Group. Available at: <https://russellgroup.ac.uk/about/our-universities/> (Accessed: 20 November 2023).
- Salvia, M. *et al.* (2023) 'Understanding the motivations and implications of climate emergency declarations in cities: The case of Italy', *Renewable and Sustainable Energy Reviews*, 178, p. 113236. Available at: <https://doi.org/10.1016/j.rser.2023.113236>.
- Saunders, C., Grasso, M.T. and Hedges, C. (2018) 'Attention to climate change in British newspapers in three attention cycles (1997–2017)', *Geoforum*, 94, pp. 94–102. Available at: <https://doi.org/10.1016/j.geoforum.2018.05.024>.
- Saunders, M.N.K. (2013) 'Choosing Research Participants', in G. Symon and C. Cassell (eds) *Qualitative organizational research: core methods and current challenges*. 2nd edn. London: SAGE, pp. 35–52.
- Schein, E.D. and Schein, P. (2016) *Organizational Culture and Leadership*. 5th edn. New York: Wiley.
- SDG Accord (n.d.) *Global Climate Letter for Universities and Colleges*. Available at: <https://www.sdgaccord.org/climateletter> (Accessed: 27 January 2021).
- Sedlacek, S. (2013) 'The role of universities in fostering sustainable development at the regional level', *Journal of Cleaner Production*, 48, pp. 74–84. Available at: <https://doi.org/10.1016/j.jclepro.2013.01.029>.
- Seitz, S. (2016) 'Pixelated partnerships, overcoming obstacles in qualitative interviews via Skype: a research note', *Qualitative Research*, 16(2), pp. 229–235. Available at: <https://doi.org/10.1177/1468794115577011>.

References

- Shields, R. (2019) 'The sustainability of international higher education: Student mobility and global climate change', *Journal of Cleaner Production*, (217), pp. 594–602. Available at: <https://doi.org/10.1016/j.jclepro.2019.01.291>.
- Stein, S. (2023) 'Universities confronting climate change: beyond sustainable development and solutionism', *Higher Education* [Preprint]. Available at: <https://doi.org/10.1007/s10734-023-00999-w>.
- Stein, S. and Hare, J. (2023) 'The Challenges of Interrupting Climate Colonialism in Higher Education: Reflections on a University Climate Emergency Plan', *Harvard Educational Review*, 93(3), pp. 289–312. Available at: <https://doi.org/10.17763/1943-5045-93.3.289>.
- Sterling, S. (2013) 'The sustainable university: challenge and response', in S. Sterling, L. Maxey, and H. Luna (eds) *The Sustainable University: Progress and prospects*. London: Routledge, pp. 17–50.
- Sterling, S. and Maxey, L. (2013) 'The sustainable university: Taking it forward', in S. Sterling, L. Maxey, and H. Luna (eds) *The Sustainable University: Progress and prospects*. London: Routledge, pp. 304–317.
- Sterling, S., Maxey, L. and Luna, H. (2013) *The Sustainable University: Progress and prospects*. London: Routledge.
- Stöber, H., Gaebel, M. and Morrisroe, A. (2021) *Greening in European higher education institutions: EUA survey data*. European University Association. Available at: <https://eua.eu/resources/publications/982:greening-in-european-higher-education-institutions.html> (Accessed: 17 December 2023).
- Stoddard, I. *et al.* (2021) 'Three Decades of Climate Mitigation: Why Haven't We Bent the Global Emissions Curve?', *Annual Review of Environment and Resources*, 46(1), pp. 653–689. Available at: <https://doi.org/10.1146/annurev-environ-012220-011104>.
- Students Organising for Sustainability (2023a) *Sustainability skills survey 2022-23: Research into students' experiences of teaching and learning on sustainable development*. United Kingdom: Students Organising for Sustainability. Available

References

- at: <https://www.sos-uk.org/post/two-thirds-of-students-want-to-learn-more-about-sustainability> (Accessed: 1 April 2024).
- Students Organising for Sustainability (2023b) *Student opinion: university financial investments*. United Kingdom: Students Organising for Sustainability. Available at: <https://www.sos-uk.org/research/student-opinion-university-financial-investments> (Accessed: 29 August 2024).
- Supran, G. and Oreskes, N. (2021) *The forgotten oil ads that told us climate change was nothing*, *The Guardian*. Available at: <https://www.theguardian.com/environment/2021/nov/18/the-forgotten-oil-ads-that-told-us-climate-change-was-nothing> (Accessed: 26 February 2023).
- Tandon, A. (2021) 'Analysis: The lack of diversity in climate-science research', *Carbon Brief*, 6 October. Available at: <https://www.carbonbrief.org/analysis-the-lack-of-diversity-in-climate-science-research/> (Accessed: 26 July 2023).
- Tatum, M. (2020) "'We deserve to be taught about it": why students want climate crisis classes', *The Guardian*, 28 September. Available at: <https://www.theguardian.com/education/2020/sep/28/we-deserve-to-be-taught-about-it-why-students-want-climate-crisis-classes> (Accessed: 31 January 2024).
- Taylor, S. (2013) *What is discourse analysis?* London: Bloomsbury Academic. Available at: <http://dx.doi.org/10.5040/9781472545213.ch-005>.
- Taylor, M. and Watts, J. (2019) *Revealed: the 20 firms behind a third of all carbon emissions*, *The Guardian*. Available at: <https://www.theguardian.com/environment/2019/oct/09/revealed-20-firms-third-carbon-emissions> (Accessed: 26 February 2023).
- Thackeray, S.J. *et al.* (2020) 'Civil disobedience movements such as School Strike for the Climate are raising public awareness of the climate change emergency', *Global Change Biology*, 26(3), pp. 1042–1044. Available at: <https://doi.org/10.1111/gcb.14978>.
- The Privy Council Office. (n.d.) Higher Education. Retrieved from <https://privycouncil.independent.gov.uk/privy-council-office/higher-education/>

References

- The Royal Anniversary Trust (2023) *Accelerating the UK Tertiary Education Sector towards Net Zero: A sector-led proposal for action and connected thinking*. The Royal Anniversary Trust. Available at: <https://www.universitiesuk.ac.uk/topics/climate-and-sustainability/accelerating-uk-tertiary-education> (Accessed: 18 May 2023).
- Thierry, A. *et al.* (2023) “‘No research on a dead planet’: preserving the socio-ecological conditions for academia’, *Frontiers in Education*, 8, p. 1237076. Available at: <https://doi.org/10.3389/feduc.2023.1237076>.
- Tierney, W.G. (1988) ‘Organizational Culture in Higher Education: Defining the Essentials’, *The Journal of Higher Education*, 59(1), p. 2. Available at: <https://doi.org/10.2307/1981868>.
- Tietze, S. (2013) ‘Researching your own organisation’, in G. Symon and C. Cassell (eds) *Qualitative organizational research: core methods and current challenges*. 2nd edn. London: SAGE, pp. 53–71.
- Times Higher Education (2019) *Universities must act swiftly and independently on climate change*, *Times Higher Education*. Available at: <https://www.timeshighereducation.com/opinion/universities-must-act-swiftly-and-independently-climate-change> (Accessed: 26 July 2023).
- Toman, I., van’t Land, H. and Harris, M. (2023) *Accelerating action for the SDGs in Higher Education*. France: International Association of Universities. Available at: <https://www.iau-aiu.net/Accelerating-Action-for-the-SDGs-Read-the-Report-of-the-3rd-IAU-Global-Survey> (Accessed: 12 March 2024).
- Tseng, S.H.Y., Lee, C. and Higham, J. (2023) ‘The impact of COVID-19 on academic aeromobility practices: Hypocrisy or moral quandary?’, *Mobilities*, 18(3), pp. 445–467. Available at: <https://doi.org/10.1080/17450101.2022.2121658>.
- Turney, C. (2019) *UK becomes first country to declare a ‘climate emergency*, *The Conversation*. Available at: <https://theconversation.com/uk-becomes-first-country-to-declare-a-climate-emergency-116428> (Accessed: 9 April 2024).

References

- UK Government. (2019). *UK becomes first major economy to pass net zero emissions law*. Available at: <https://www.gov.uk/government/news/uk-becomes-first-major-economy-to-pass-net-zero-emissions-law> (Accessed 9 April 2024).
- Uluğ, O.M. (2022) [Twitter] 4 July. Available at: <https://twitter.com/melisulug/status/1543933020629078016> (Accessed: 5 July 2022).
- UN Environment (2019) *Higher and Further Education Institutions Across the Globe Declare Climate Emergency*. Available at: https://www.sdgaccord.org/files/eng_highered_pressrelease10072019.pdf (Accessed: 26 January 2021).
- UNDP and University of Oxford (2021) *Peoples' Climate Vote*. Available at: <https://www.undp.org/publications/peoples-climate-vote> (Accessed: 5 December 2021).
- United Nations Climate Change (n.d.) *What are Parties & non-Party stakeholders?*, *United Nations Climate Change*. Available at: <https://unfccc.int/process-and-meetings/what-are-parties-non-party-stakeholders> (Accessed: 31 March 2024).
- United Nations Framework Convention on Climate Change (2016) *The Paris Agreement*, *United Nations Climate Change*. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement> (Accessed: 22 February 2023).
- Universities UK (2023) 'How are universities addressing the climate and ecological emergency?', *Universities UK*, 28 June. Available at: <https://www.universitiesuk.ac.uk/latest/insights-and-analysis/how-are-universities-addressing-climate> (Accessed: 12 March 2024).
- Universities UK (2016) *University funding explained*, *Universities UK*. Available at: <https://issuu.com/universitiesuk/docs/university-funding-explained> (Accessed: 26 July 2023).

References

Universities UK (n.d.a) *Climate and sustainability, Universities UK*. Available at: <https://www.universitiesuk.ac.uk/topics/climate-and-sustainability> (Accessed: 25 March 2024).

Universities UK (n.d.b) *Our members, Universities UK*. Available at: <https://www.universitiesuk.ac.uk/about-us/our-members> (Accessed: 30 September 2022).

Universities UK International (2023a) *International facts and Figures 2023, Universities UK*. Available at: <https://www.universitiesuk.ac.uk/universities-uk-international/insights-and-publications/uuki-publications/international-facts-and-figures-2023> (Accessed: 30 March 2024).

Universities UK International (2023b) *Annual Report 2022-23*. United Kingdom: Universities UK. Available at: <https://www.universitiesuk.ac.uk/universities-uk-international/insights-and-publications/uuki-publications/annual-report-2022-23> (Accessed: 30 March 2024).

University and College Union (2022) *UK higher education: A workforce in crisis*. London: University and College Union. Available at: <https://www.ucu.org.uk/article/12212/Two-thirds-of-university-staff-considering-leaving-sector-new-report-reveals> (Accessed: 18 May 2023).

University College London (n.d.) *LEAF - Laboratory Efficiency Assessment Framework, University College London*. Available at: <https://www.ucl.ac.uk/sustainable/take-action/staff-action/leaf-laboratory-efficiency-assessment-framework> (Accessed: 8 April 2024).

University of Bath (2023a) 'Systemic transformation and individual action: Keys to addressing the climate crisis', 11 May. Available at: <https://blogs.bath.ac.uk/climate-action/2023/05/11/systemic-transformation-and-individual-action-keys-to-addressing-the-climate-crisis/> (Accessed: 10 June 2023).

University of Bath (2023b) 'Climate Action Survey results 2023: Students and staff united to drive strong action', 15 May. Available at:

References

- <https://blogs.bath.ac.uk/climate-action/2023/03/15/climate-action-survey-results-2023-students-and-staff-united-to-drive-strong-action/> (Accessed: 10 June 2023).
- University of Brighton (2020) 'University Declares Climate Emergency.', *University of Brighton*, 17 January. Available at: <https://www.brighton.ac.uk/news/2020/university-declares-climate-emergency> (Accessed: 26 January 2021).
- University of Bristol (2019). 'University of Bristol declares a climate emergency.', *University of Bristol*, April 17. Available at: <http://www.bristol.ac.uk/biology/news/2019/university-of-bristol-declares-a-climate-emergency.html> (Accessed 26 January 2021).
- University of Exeter (2019) 'University Declares an Environment and Climate Emergency', *University of Exeter*. Available at: https://www.exeter.ac.uk/news/featurednews/title_717135_en.html (Accessed: 26 January 2021).
- University of Glasgow (2021) *Guidance for sustainable business travel for staff and postgraduate researchers*. United Kingdom: University of Glasgow. Available at: https://www.gla.ac.uk/media/Media_771681_smx.pdf (Accessed: 29 March 2024).
- University of Glasgow (2019) 'UofG Declares a Climate Emergency', *University of Glasgow*, 2 May. Available at: https://www.gla.ac.uk/news/archiveofnews/2019/may/headline_646140_en.html (Accessed: 28 January 2021)
- University of Manchester (2019) 'University Supports Government's Climate Declaration', *University of Manchester*, 2 July. Available at: <https://www.manchester.ac.uk/discover/news/university-supports-governments-climate-declaration> (Accessed: 26 January 2021).

References

- University of Plymouth (2019) 'University of Plymouth declares a climate emergency', 10 July. Available at: <https://www.plymouth.ac.uk/news/university-of-plymouth-declares-a-climate-emergency> (Accessed: 30 November 2019).
- University of Sussex (2019) 'University of Sussex declares climate emergency', *University of Sussex*, 1 August. Available at: <http://www.sussex.ac.uk/broadcast/read/49187> (Accessed: 4 November 2019).
- University of Warwick (2019) 'University of Warwick Climate Emergency Declaration', *University of Warwick*, 20 September. Available at: https://warwick.ac.uk/newsandevents/pressreleases/university_of_warwick_climate_emergency_declaration1/ (Accessed: 30 November 2019).
- University of Winchester (2019) 'University of Winchester Declares Climate Emergency', *University of Winchester*, 20 September. Available at: <https://www.winchester.ac.uk/news-and-events/press-centre/media-articles/university-of-winchester-declares-climate-emergency.php> (Accessed: 30 November 2019).
- Urai, A.E. and Kelly, C. (2023) 'Rethinking academia in a time of climate crisis', *eLife*, 12, p. e84991. Available at: <https://doi.org/10.7554/eLife.84991>.
- Uyarra, E. (2010) 'Conceptualizing the Regional Roles of Universities, Implications and Contradictions', *European Planning Studies*, 18(8), pp. 1227–1246. Available at: <https://doi.org/10.1080/09654311003791275>.
- Valero, A. and Van Reenen, J. (2016) 'The more universities in a country, the faster its economic growth', *LSE Business Review*, 23 March. Available at: <https://blogs.lse.ac.uk/businessreview/2016/03/23/the-more-universities-in-a-country-the-faster-its-economic-growth/> (Accessed: 31 January 2024).
- Visser, W. and Tolhurst, N. (2017) *The World Guide to CSR*. 2nd edn. Oxon: Routledge.
- Walker, A. (2019) 'Goldsmiths Bans Beef From University Cafes to Tackle Climate Crisis', *The Guardian*, 12 August. Available at: <https://www.theguardian.com/environment/2019/aug/12/goldsmiths-bans-beef-from-university-cafes-to-tackle-climate-crisis> (Accessed: 26 January 2021).

References

- Walshe, N. (2023) 'Class action', *Portico Magazine*. Available at: <https://magazine.ucl.ac.uk/insider-nicola-walshe/> (Accessed: 29 May 2023).
- Wang, S., Corner, A. and Nicholls, J. (2020) *Britain Talks Climate: A toolkit for engaging the British public on climate change.*, *Climate Outreach*. Available at: <https://climateoutreach.org/reports/britain-talks-climate/> (Accessed: 12 January 2022).
- Watts, D.J. (2017) 'Should social science be more solution-oriented?', *Nature Human Behaviour*, 1(1), p. 0015. Available at: <https://doi.org/10.1038/s41562-016-0015>.
- Webster, R., Powell, D. and Corner, A. (2022) 'Fairness' in UK climate advocacy: a user's guide. Oxford: Climate Outreach. Available at: <https://climateoutreach.org/reports/fairness-climate-advocacy/#> (Accessed: 18 August 2022).
- Wellcome and Shift Learning (2020) *What Researchers Think About the Culture They Work In*. wellcome. Available at: <https://wellcome.org/reports/what-researchers-think-about-research-culture> (Accessed: 30 September 2022).
- Weller, S. (2017) 'Using internet video calls in qualitative (longitudinal) interviews: some implications for rapport', *International Journal of Social Research Methodology*, 20(6), pp. 613–625. Available at: <https://doi.org/10.1080/13645579.2016.1269505>.
- White, R. (2013) 'Sustainability research: A novel mode of knowledge generation to explore alternative ways for people and planet', in S. Sterling, L. Maxey, and H. Luna (eds) *The Sustainable University: Progress and prospects*. London: Routledge, pp. 168–191.
- Whiteley, A. (2022) 'Climate crisis: what progress have universities made?', *Universities UK*, 20 December. Available at: <https://www.universitiesuk.ac.uk/latest/insights-and-analysis/climate-crisis-what-progress-have> (Accessed: 18 May 2023).
- Whitmarsh, L. *et al.* (2022) 'The IPCC's message is clear: social transformation, not a technofix, is needed to tackle climate change', 7 April. Available at:

References

- <https://cast.ac.uk/the-ipccs-message-is-clear-social-transformation-not-a-technofix-is-needed-to-tackle-climate-change/> (Accessed: 7 January 2024).
- Whitmarsh, L. *et al.* (2020) 'Use of aviation by climate change researchers: Structural influences, personal attitudes, and information provision', *Global Environmental Change*, 65, p. 102184. Available at: <https://doi.org/10.1016/j.gloenvcha.2020.102184>.
- World Health Organization (2022) 'WHO and NHS to work together on decarbonization of health care systems across the world', *World Health Organization*, 7 April. Available at: <https://www.who.int/news-room/feature-stories/detail/who-and-nhs-to-work-together-on-decarbonization-of-health-care-systems-across-the-world> (Accessed: 29 May 2023).
- World Meteorological Organization (2022a) 'Temperatures in Europe increase more than twice global average', *World Meteorological Organization*, 2 November. Available at: <https://public.wmo.int/en/media/press-release/temperatures-europe-increase-more-twice-global-average> (Accessed: 21 February 2023).
- World Meteorological Organization (2022b) 'Economic losses from extreme weather rocket in Asia', *World Meteorological Organization*, 14 November. Available at: <https://public.wmo.int/en/media/press-release/economic-losses-from-extreme-weather-rocket-asia> (Accessed: 21 February 2023).
- World Resources Institute (2022) *Climate Watch Historical GHG Emissions*, *Climate Watch*. Available at: <https://www.climatewatchdata.org/ghg-emissions> (Accessed: 22 February 2023).
- Wotherspoon, T. (2012) 'Triple helix or triple jeopardy? Universities and the social relations of knowledge', in J. Dzisah and H. Etzkowitz (eds) *The age of knowledge the dynamics of universities, knowledge & society*. Leiden: Brill (Studies in critical social sciences), pp. 51–71.
- Wynes, S. *et al.* (2019) 'Academic air travel has a limited influence on professional success', *Journal of Cleaner Production*, 226, pp. 959–967. Available at: <https://doi.org/10.1016/j.jclepro.2019.04.109>.

Appendices

Appendix A: Documentary analysis

A1 Links to UK university climate emergency declarations. 319

A1 Links to UK university climate emergency declarations.

Table 15. Links to declarations.

University	Link to declaration	Further information
University of Bristol	http://www.bristol.ac.uk/biology/news/2019/university-of-bristol-declares-a-climate-emergency.html	
Newcastle University	https://www.ncl.ac.uk/press/articles/archive/2019/04/climateemergency/	
University of Glasgow	https://www.gla.ac.uk/news/archiveofnews/2019/may/headline_646140_en.html	
Keele University	https://www.keele.ac.uk/discover/news/2019/may/climate-emergency/sustainability.php	
University of Lincoln	https://www.lincoln.ac.uk/news/2019/05/1540.asp	
University of Exeter	https://www.exeter.ac.uk/news/featurednews/title_717135_en.html	
University of East Anglia	https://www.uea.ac.uk/news/-/article/uea-declares-a-climate-and-biodiversity-emergency	
UWE Bristol	https://www2.uwe.ac.uk/services/Marketing/about-us/pdf/Policies/UWE-Bristol-Board-of-Governors-Declaration-of-Climate-and-Ecological-Emergency-v3.pdf	Date of declaration was provided via personal correspondence with EAUC.
Falmouth University	https://www.falmouth.ac.uk/news/falmouth-university-declares-climate-ecological-emergency	
Bangor University	https://www.bangor.ac.uk/news/archive/bangor-university-joins-organisations-declaring-climate-emergency-40948	
University of Manchester	https://www.manchester.ac.uk/discover/news/university-supports-governments-climate-declaration/	
King's College London	https://www.sdgaccord.org/climateletter	Date of declaration was provided via personal correspondence with EAUC.
Glasgow Caledonian University	https://www.sdgaccord.org/climateletter	Date of declaration was provided via personal

Appendices

		correspondence with EAUC.
University of Plymouth	https://www.plymouth.ac.uk/news/university-of-plymouth-declares-a-climate-emergency	
University of Worcester	https://www.sdgaccord.org/climateletter	Date of declaration was provided via personal correspondence with EAUC.
University of Sussex	http://www.sussex.ac.uk/broadcast/read/49187	
Canterbury Christ Church University	https://www.canterbury.ac.uk/news/news.aspx?id=aa3b543e-9c2d-46b0-90f8-82b2be788bca	
Goldsmiths, University of London	https://www.gold.ac.uk/news/carbon-neutral-plan/	
University of Edinburgh	https://www.sdgaccord.org/climateletter	Date of declaration was provided via personal correspondence with EAUC.
University of Warwick	https://warwick.ac.uk/newsandevents/pressreleases/university_of_warwick_climate_emergency_declaration1/	
University of Winchester	https://www.winchester.ac.uk/news-and-events/press-centre/media-articles/university-of-winchester-declares-climate-emergency.php	
Anglia Ruskin University	Not applicable - mentioned only in a related news article.	
Birmingham City University	https://bcuassets.blob.core.windows.net/docs/20190920bcuclimateemergencystatement-132235705426425876.pdf	
University of Cambridge	https://www.sdgaccord.org/climateletter	Date of declaration was provided via personal correspondence with EAUC.
University of Portsmouth	https://www.sdgaccord.org/climateletter	Date of declaration was provided via personal correspondence with EAUC.
Swansea University	https://www.sdgaccord.org/climateletter	Date of declaration was provided via personal

Appendices

		correspondence with EAUC.
UCL	https://www.sdgaccord.org/climateletter	Date of declaration was provided via personal correspondence with EAUC.
Royal Agricultural University	https://www.sdgaccord.org/climateletter	Date of declaration was provided via personal correspondence with EAUC.
Plymouth Marjon University	https://www.sdgaccord.org/climateletter	
Aberystwyth University	https://www.aber.ac.uk/en/news/archive/2019/11/title-227209-en.html	
Cardiff University	https://www.cardiff.ac.uk/news/view/1730638-cardiff-university-declares-climate-emergency	
University of Brighton	https://www.brighton.ac.uk/news/2020/university-declares-climate-emergency	
Brunel University London	https://www.brunel.ac.uk/news-and-events/news/articles/Brunel-declares-a-climate-change-emergency	
Liverpool John Moores University	https://www.ljmu.ac.uk/about-us/news/articles/2020/2/7/ljmu-declares-climate-emergency	
Buckinghamshire New University	https://www.sdgaccord.org/climateletter	
Bath Spa University	https://www.bathspa.ac.uk/news-and-events/news/climate-emergency-declaration/	
University of Nottingham	https://www.nottingham.ac.uk/sustainability/strategy/sustainabilityandtheuniversityofnottingham.aspx	Date of declaration was provided via personal correspondence with the University of Nottingham sustainability team.

Appendix B: Participant observation

B1 Participant observation information sheet.....	323
B2 Participant observation consent form.....	324

B1 Participant observation information sheet

Research information sheet

University research culture in the context of the climate emergency

PhD researcher: Briony Latter, School of Psychology

Aims of the research

Over the past year there has been a sustained high level of publicity around climate change in the UK and 2019 has seen the practice of declaring a climate emergency come to the fore. More than 20 UK universities have declared a climate emergency since April 2019, including [name of university]. Research is one of the main purposes of universities and should therefore be subject to scrutiny as part of any climate mitigation or adaptation plans following the climate emergency declarations. There have been numerous calls for researchers from multiple disciplines to reflect and act on their own carbon emissions, however, researchers at universities do not operate in isolation and their activities are part of a wider structure and culture.

Undertaking observational research during this series of internal [name of university] university meetings about their climate emergency declaration will provide insight in to how the university is responding to this declaration. Observing these meetings will provide details about what will be affected as part of the declaration and the process by which decisions are made. This will contribute to the overall research project as it will enable a richer understanding of how universities are responding to the climate emergency and to what extent research is included within that.

What does the research involve?

The PhD researcher will observe a series of pre-arranged meetings about [name of university]'s declaration of a climate emergency and will take notes on proceedings. There may be interaction with others at the meetings, but the PhD researcher will attend primarily in the capacity of observer. There will be no materials provided to those attending the meetings as the research depends upon naturalistic observation.

B2 Participant observation consent form

School of Psychology, Cardiff University

University research culture in the context of the climate emergency

Consent Form - Anonymous data

I understand that my participation in this project will involve a PhD researcher observing a series of meetings at which I am present, and where the researcher will be taking notes on proceedings.

I understand that participation in this study is entirely voluntary and that I can withdraw from the study at any time without giving a reason. In this case, the researcher will not take notes on any comments that I make within a meeting.

I understand that I am free to ask any questions at any time. I am free to withdraw or discuss my concerns with the researcher, Briony Latter, or the supervisor, Stuart Capstick.

I understand that the research information provided by me will be held. I understand that this information may be retained indefinitely or published.

I, _____ (NAME) consent to participate in the study conducted by Briony Latter, School of Psychology, Cardiff University with the supervision of Dr Stuart Capstick.

Signed: _____

Date: _____

Privacy Notice:

The information provided on the consent form will be held in compliance with GDPR regulations. Cardiff University is the data controller and Matt Cooper is the data protection officer (inforequest@cardiff.ac.uk). This information is being collected by Briony Latter. This information will be held securely and separately from the research information you provide. Only the researcher will have access to this form and it will be destroyed after 7 years. The lawful basis for processing this information is public interest.

Appendix C: Interviews

C1 Interviews information sheet.....	326
C2 Interviews consent form – anonymous	328
C3 Interviews consent form – confidential.....	329
C4 Interview protocol.....	331

C1 Interviews information sheet

Research information sheet

University research culture in the context of the climate emergency

PhD researcher: Briony Latter, School of Psychology and the Centre for Climate Change and Social Transformations (CAST), Cardiff University

Aims of the research

There has recently been a sustained high level of publicity around climate change in the UK and 2019 saw the practice of declaring a climate emergency come to the fore. More than 30 UK universities have declared a climate emergency since April 2019. Research is one of the main purposes of universities and should therefore be subject to scrutiny as part of any climate mitigation or adaptation plans following the climate emergency declarations. There have been numerous calls for researchers from multiple disciplines to reflect and act on their own carbon emissions, however, researchers at universities do not operate in isolation and their activities are part of a wider structure and culture.

The aim of the study is to understand how university research cultures and practices are changing in response to climate change and what the role of the climate emergency is in producing or manifesting this change.

What does the research involve?

You will take part in one interview with the PhD researcher, with the potential to be invited to a follow-up interview, and will be asked a series of questions relating to the research topic. Consenting to the first interview does not oblige you to participate in the follow-up interview. The duration of the interviews will be up to an hour but will be discussed with you in advance. Interviews will be recorded and transcribed. The original recordings will be deleted once transcription has taken place, within 12 months of the interviews taking place. Interviews will be conducted by internet video calls due to COVID-19 travel and social distancing restrictions.

Privacy notice

The information provided will be held in compliance with GDPR regulations. Cardiff University is the data controller and Matt Cooper is the data protection officer (inforequest@cardiff.ac.uk). The lawful basis for processing this information is public interest. This information is being collected by Briony Latter.

The information on the consent form will be held securely and separately from the research information. Only the researcher will have access to this form and it will be destroyed after 7 years.

Appendices

[*For confidential interviews:* The interviews will be conducted confidentially. No participants will be named or have their job title included in the research and efforts will be made to minimise the risk that they will be identifiable. It is not possible to guarantee anonymity as participants will be drawn from specific small sample groups with particular professional responsibilities (e.g. university executive board or sustainability officers). Participants will be informed of this and consent on this basis. If you have any concerns about this, please discuss with the researcher.]

Participants are free to withdraw or discuss concerns with the researcher, Briony Latter (latterbi@cardiff.ac.uk), or the supervisor, Dr Stuart Capstick (capsticksb@cardiff.ac.uk). This project has been reviewed and ethically approved by the School of Psychology Ethics Committee at Cardiff University.

Thank you for taking the time to read this information.

C2 Interviews consent form – anonymous

School of Psychology, Cardiff University

University research culture in the context of the climate emergency

Consent Form – Anonymous data

I understand that my participation in this project will involve taking part in an interview that will take up to an hour of my time and discussing my views and experiences about research and climate change. I understand that the interview will be recorded and transcribed.

I understand that participation in this study is entirely voluntary and that I can withdraw from the study at any time without giving a reason. I also understand that I can withdraw my data from the study up until the point at which PhD analysis has been prepared for submission by contacting the researcher.

I understand that I am free to ask any questions at any time. I am free to withdraw or discuss my concerns with the researcher, Briony Latter, or the supervisor, Dr Stuart Capstick.

I understand that the research information provided by me will be held totally anonymously, so that it is impossible to trace this information back to me individually. I understand that this information may be retained indefinitely or published.

I understand that at the end of the study I will be provided with additional information and feedback about the purpose of the study.

I, _____ (NAME) consent to participate in the study conducted by Briony Latter, School of Psychology, Cardiff University with the supervision of Dr Stuart Capstick.

Signed: _____

Date: _____

Privacy Notice:

The information provided on the consent form will be held in compliance with GDPR regulations. Cardiff University is the data controller and Matt Cooper is the data protection officer (inforequest@cardiff.ac.uk). This information is being collected by Briony Latter.

This information will be held securely and separately from the research information you provide. Only the researcher will have access to this form and it will be destroyed after 7 years. The lawful basis for processing this information is public interest.

C3 Interviews consent form – confidential

School of Psychology, Cardiff University
University research culture in the context of the climate emergency
Consent Form – Confidential data

I understand that my participation in this project will involve taking part in an interview that will take up to an hour of my time and discussing my views and experiences about research and climate change. I understand that the interview will be recorded and transcribed.

I understand that participation in this study is entirely voluntary and that I can withdraw from the study at any time without giving a reason. I also understand that I can withdraw my data from the study up until the point at which PhD analysis has been prepared for submission by contacting the researcher.

I understand that I am free to ask any questions at any time. I am free to withdraw or discuss my concerns with the researcher, Briony Latter, or the supervisor, Dr Stuart Capstick.

I understand that the personal data will be processed in accordance with GDPR regulations (see privacy statement below).

I understand that the research information provided by me will be held confidentially. All efforts possible will be made to remove identifying information though interviewees should be aware that there is the potential to be identified given a focus on interviewing people with particular professional responsibilities (e.g. university sustainability officers). I understand that this information may be retained indefinitely or published.

I understand that at the end of the study I will be provided with additional information and feedback about the purpose of the study.

I, _____(NAME) consent to participate in the study conducted by Briony Latter, School of Psychology, Cardiff University with the supervision of Dr Stuart Capstick.

Signed: _____

Date: _____

Privacy Notice:

The information provided will be held in compliance with GDPR regulations. Cardiff University is the data controller and Matt Cooper is the data protection officer (inforequest@cardiff.ac.uk).

Appendices

The lawful basis for processing this information is public interest. This information is being collected by Briony Latter.

The information on the consent form will be held securely and separately from the research information. Only the researcher will have access to this form and it will be destroyed after 7 years.

The research information you provide will be used for the purposes of research only and will be stored securely. Only Briony Latter will have access to this information.

C4 Interview protocol

The interview questions below were for researchers only. Questions differed slightly for different groups.

Introductory questions

1. Before we get into the main questions, could you tell me a bit about the research you do? How did you come to be doing research in this area (i.e. backstory)?
2. How long have you worked in research? Have you worked on other projects or in other topic areas?
3. How long have you worked at the university?
4. *Only if previous answer is short:* How long have you worked in the university sector?

Main questions

5. What are you trying to achieve through your research generally and in your career?
6. **For established researchers only:** How do you think the way research is carried out has changed over the time that you have been a researcher?
 - i. *Prompt: When you first became a researcher how did it feel compared to how it is now? / Do you have to go through different processes now, do you find it easier or harder to conduct research?*
 - ii. *Follow up: If change: to what extent are the changes you mentioned at this university specifically or within research in general? If no change: to what extent do you think there will be changes in future?*
7. Do you think there is a certain way you have to carry out your research to be successful as a researcher/in your career? What are the most important things you need to do to be a successful researcher or academic?

Appendices

- i. Prompt: If yes, could you tell me a bit about that? If no, why do you think that is?*
 - ii. Prompt: How much freedom do you have to carry out your research in the way that you want? / Are there certain things you need to do to fit in to be a researcher here? / Do researchers have shared values here?*
8. What are the most important influences on the way you carry out/conduct your research?
 - i. Prompt: These influences on how you carry out your research could be people or things you're inspired by, a desire to achieve a particular thing or more practical - being influenced by particular methods or carrying out your research in a certain way because that is what you are told to do.*
9. What does 'research culture' mean to you?
 - i. Prompt: What is the work culture like in research? / What is it?*
 - ii. Prompt: Some industries have a particular work culture e.g. law: expected to work v. long hours, bed in office. Creative industry: often expected to work for free, do lots of internships*
 - iii. Prompt: Good and/or bad*
 - iv. Prompt: Might be unspoken norms/values/things you're expected to do or could be things that are quite explicit*
10. What do you think influences research culture?
 - i. Prompt: How do you think this culture is created and maintained?*
11. How would you describe what it means to be a researcher?
12. Is getting known internationally for your work important?
 - i. Prompt: E.g. is it important for you to get international recognition for your work?*

Appendices

13. How important is it to gain an international profile/reputation in your field? How does a researcher in your field get to have an international reputation (for you individually/your department/your university)? Is it an important part of being a researcher? (If they mention conferences, travel): Do you travel a lot as part of your work and/or research?

Now I want to ask a few questions about climate change.

14. Is climate change something that you are personally concerned about? Why is that? What concerns you? *For 'no' people:* is there a particular reason you are not concerned about it?

15. Have you noticed any changes in your job due to climate change? Or broader sustainability issues?

i. *Prompt: Is the way that you carry out your research changed? Is the university asking you to do things differently?*

16. Do you think about climate change when you do your job? In what ways?

17. As a member of the university's research community, do you think there are things you can do, or responsibilities you have, to help tackle climate change?

i. *Prompt: Do you think researchers in the university have a responsibility to help tackle climate change? Are there things you can do as a researcher?*

18. Who do you think should act on climate change in universities?

i. *Follow-up: You said x should act. Who do you think has the power/ability to make a difference on climate change in universities? Why?*

19. Are you aware of anything that your university is doing to tackle climate change? To what extent do you think your research practices might change as a result of the university's action on climate change? To what extent should researchers be trying to influence the way the university addresses climate change?

Appendices

20. **For climate emergency declaration uni:** Did you know that your university has declared a climate change emergency? How do you feel about the university declaring a climate emergency? Do you think your university's climate emergency declaration will impact your work as a researcher? Do you think it *should* impact how research is done, or the research culture of academia?
21. **For non-climate emergency declaration uni:** Some universities have declared a 'climate emergency' but your university has not. Why do you think your university didn't declare a climate emergency? Do you think they should have declared a climate emergency? Why?
22. What do you think the role of universities is in society?
- i. *Prompt: What do you think the purpose of universities is? / What do you think universities are for?*
23. Your university states that their mission/aim is [x]. To what extent do you think this influences how you conduct your research?
24. Do you think all universities have a responsibility to act on climate change? Why and what do you think that should include?

Do you have anything further to add that you haven't spoken about?

Appendix D: Survey

D1 Survey information sheet and consent.....	336
D2 Survey questions and coding	338
D3 Number of survey responses per university	350
D4 Pairwise comparisons between rank items for question 14	351
D5 Holm-Bonferroni correction list.....	356
D6 Skewness results for exploratory question 1	357
D7 Exploratory questions 1a-1d.....	358
D8 Skewness results for hypotheses.....	360
D9 Hypothesis 1b	361
D10 Skewness results for exploratory questions 2-5	362
D11 Test Statistics for exploratory question 2.....	363
D12 Test Statistics for exploratory question 3	364
D13 Non-significant results for exploratory question 5.....	365
D14 Skewness results for exploratory question 6.	366
D15 Non-significant results for exploratory question 6a.....	367
D16 Test Statistics for exploratory question 6b	368
D17 Test Statistics for exploratory question 6c.....	369
D18 Exploratory question 6d.....	370
D19 Test Statistics for exploratory question 6e	371
D20 Non-significant results for exploratory question 6e.....	372

D1 Survey information sheet and consent

Before starting the survey: information and consent

I am a PhD researcher at the Centre for Climate Change and Social Transformations (CAST) at Cardiff University and would like to invite you to take part in this survey about research culture and practices, university culture, and climate change.

I am looking for researchers from all disciplines in universities across the UK to take part.

At the end of the survey there is an option to take part in a prize draw to win a £100 Love2Shop eVoucher.

Please read the following information carefully before deciding whether to take part or not.

What is the research about?

This survey is about research culture and practices, university culture, and climate change. My aim is to understand the experiences and attitudes of academic researchers in UK universities with regards to these areas, including looking at variability in their engagement with climate change and what influences this.

Why have I been invited?

You have been invited to take part in the survey because you are a researcher working in a UK university. You do not have to work in or have knowledge about climate change to take part. **I am looking for researchers from all disciplines in universities across the UK to take part.** I would be very grateful for your time if you take part in this survey.

What does the research involve?

The survey involves answering a series of questions about your experiences and attitudes towards research culture and practices, university culture, and climate change. The survey should take approximately 13 minutes to complete.

What will happen to my personal data?

The survey is anonymous and no personal data is collected.

If you choose to enter the prize draw, you will be asked for your name and email address solely for the purpose of administering the voucher if you win. These details will be kept separately from the survey information. Only myself and my PhD supervisor will have access to this information, and it will only be retained until the survey closes and the prize draw has been completed. The personal information provided will be held in compliance with GDPR regulations. Cardiff University is the data controller and Matt Cooper is the data protection officer (inforequest@cardiff.ac.uk). The lawful basis for processing this information is consent.

Do I have to take part?

No – your participation is voluntary, and you are free to withdraw from the survey at any time prior to submitting your answers. The survey data will be held totally anonymously, so that it is impossible to trace this information back to you individually and it is therefore not possible to withdraw from the survey once you have submitted your answers. The survey data may

Appendices

be retained indefinitely or published.

What if I have a question or concern?

You are free to discuss concerns with myself, the researcher, Briony Latter (latterbi@cardiff.ac.uk), or the supervisor, Dr Stuart Capstick (capsticksb@cardiff.ac.uk). This project has been reviewed and ethically approved by the School of Psychology Ethics Committee at Cardiff University.

At the end of the survey: debrief

Thank you for taking part in this study.

The aim of the survey is to understand the experiences and attitudes of academic researchers in UK universities with regards to research culture and practices, university culture, and climate change, including looking at variability in their engagement with climate change and what influences this.

If you have any questions or concerns, you are free to contact the researcher, Briony Latter (latterbi@cardiff.ac.uk), or the supervisor, Dr Stuart Capstick (capsticksb@cardiff.ac.uk).

If you would like to take part in the prize draw for a £100 Love2Shop eVoucher, please follow the link below to enter your name and e-mail address. This information will not be connected to your responses in the survey, and will be only be used to contact you if you win the prize draw.

https://cardiffunipsych.eu.qualtrics.com/jfe/form/SV_5sFYIYcVIFHgl4a

D2 Survey questions and coding

Section 1: Introductory questions

1) Have you engaged in research in the last three years?

This could be empirical research (where data is collected and/or analysed) or non-empirical (e.g. narrative review, design activities). [Multiple choice. Single answer]

- a. Yes = 1
- b. No = 2 [filter out of survey]

2) Which of these institutions is your primary affiliation? [Multiple choice. Single answer]

a. [Selection box of the following universities]

- Aberystwyth University = 1
- Anglia Ruskin University = 2
- Aston University = 3
- Bangor University = 4
- Bath Spa University = 5
- Birkbeck, University of London = 6
- Birmingham City University = 7
- Bishop Grosseteste University = 8
- Bournemouth University = 9
- Brunel University London = 10
- Buckinghamshire New University = 11
- Canterbury Christ Church University = 12
- Cardiff Metropolitan University = 13
- Cardiff University = 14
- City, University of London = 15
- Courtauld Institute of Art = 16
- Coventry University = 17
- Cranfield University = 18

Appendices

De Montfort University	= 19
Durham University	= 20
Edge Hill University	= 21
Edinburgh Napier University	= 22
Falmouth University	= 23
Glasgow Caledonian University	= 24
Goldsmiths, University of London	= 25
Guildhall School of Music and Drama	= 26
Heriot-Watt University	= 27
Imperial College London	= 28
Keele University	= 29
King's College London	= 30
Kingston University	= 31
Lancaster University	= 32
Leeds Beckett University	= 33
Leeds Trinity University	= 34
Liverpool Hope University	= 35
Liverpool John Moores University	= 36
London Business School	= 37
London Metropolitan University	= 38
London School of Hygiene and Tropical Medicine	= 39
London South Bank University	= 40
Loughborough University	= 41
Manchester Metropolitan University	= 42
Middlesex University	= 43
Newcastle University	= 44
Northumbria University	= 45
Norwich University of the Arts	= 46
Nottingham Trent University	= 47
Oxford Brookes University	= 48
Plymouth Marjon University	= 49
Queen Margaret University	= 50

Appendices

Queen Mary University of London	= 51
Queen's University Belfast	= 52
Regent's University London	= 53
Robert Gordon University	= 54
Royal College of Art	= 55
Royal College of Music, London	= 56
Royal Holloway, University of London	= 57
Sheffield Hallam University	= 58
SOAS, University of London	= 59
Solent University	= 60
St George's, University of London	= 61
St Mary's University, Twickenham	= 62
Staffordshire University	= 63
Swansea University	= 64
Teesside University	= 65
The Glasgow School of Art	= 66
The London School of Economics and Political Science	= 67
The Open University	= 68
The Royal Central School of Speech & Drama	= 69
The Royal Veterinary College	= 70
The University of Buckingham	= 71
The University of Manchester	= 72
The University of Nottingham	= 73
The University of Sheffield	= 74
The University of West London	= 75
Trinity Laban Conservatoire of Music and Dance	= 76
Ulster University	= 77
University College London	= 78
University for the Creative Arts	= 79
University of Aberdeen	= 80
University of Bath	= 81
University of Bedfordshire	= 82

Appendices

University of Birmingham = 83
University of Bolton = 84
University of Bradford = 85
University of Brighton = 86
University of Bristol = 87
University of Cambridge = 88
University of Central Lancashire = 89
University of Chester = 90
University of Chichester = 91
University of Cumbria = 92
University of Derby = 93
University of Dundee = 94
University of East Anglia = 95
University of East London = 96
University of Edinburgh = 97
University of Essex = 98
University of Exeter = 99
University of Glasgow = 100
University of Gloucestershire = 101
University of Greenwich = 102
University of Hertfordshire = 103
University of Huddersfield = 104
University of Hull = 105
University of Kent = 106
University of Leeds = 107
University of Leicester = 108
University of Lincoln = 109
University of Liverpool = 110
University of London = 111
University of Northampton = 112
University of Oxford = 113
University of Plymouth = 114

Appendices

University of Portsmouth	= 115
University of Reading	= 116
University of Roehampton	= 117
University of Salford	= 118
University of South Wales	= 119
University of Southampton	= 120
University of St Andrews	= 121
University of Stirling	= 122
University of Strathclyde	= 123
University of Suffolk	= 124
University of Sunderland	= 125
University of Surrey	= 126
University of Sussex	= 127
University of the Arts London	= 128
University of the Highlands and Islands	= 129
University of the West of England, Bristol	= 130
University of the West of Scotland	= 131
University of Wales Trinity Saint David	= 132
University of Warwick	= 133
University of Westminster	= 134
University of Winchester	= 135
University of Wolverhampton	= 136
University of Worcester	= 137
University of York	= 138
Wrexham Glyndwr University	= 139
York St John University	= 140

If your institution is not listed, please type it below.

[Free text box answer]

3) Which of the following best describes the discipline that you mainly associate yourself with? [Multiple choice. Single answer]

Appendices

- a. Medicine, health and life sciences = 1
- b. Physical sciences, engineering and mathematics = 2
- c. Social sciences = 3
- d. Arts and humanities = 4

4) Does your work involve researching or teaching on climate change?

[Multiple choice. Single answer]

- a. Yes - this is a major part of my work = 1
- b. Yes - this is a minor part of my work = 2
- c. No = 3

5) How would you describe your current position? [Multiple choice. Single answer]

- a. Early-career = 1
- b. Mid-career = 2
- c. Senior/professor = 3
- d. Other (please specify) = 4

Section 2: Climate change within universities

6) To what extent do you agree with the following statements?

[Strongly disagree = 1, disagree = 2, somewhat disagree = 3, neither disagree nor agree = 4, somewhat agree = 5, agree = 6, strongly agree = 7] Order will be randomised

- a. My university is not doing enough to address climate change in terms of its own impacts and emissions
- b. My university is not doing enough to address climate change in terms of its research activities
- c. My university's processes incentivise low-carbon approaches to research
- d. Research funding processes incentivise low-carbon approaches to research
- e. I want to address climate change through my role in the university

Appendices

- f. I do not know how to address climate change as part of my role in the university
- g. I receive enough information from my university about what it is doing to address climate change
- h. My university provides me with enough information about how to conduct my research in a low-carbon way
- i. In order to properly address climate change, it is necessary to change the research culture in my university

7) To what extent do you agree with the following statements?

[Strongly disagree = 1, disagree = 2, somewhat disagree = 3, neither disagree nor agree = 4, somewhat agree = 5, agree = 6, strongly agree = 7] Order will be randomised

- a. Addressing climate change is a priority for my university in terms of its own impacts and emissions
- b. Addressing climate change is a priority for my university in terms of its research activities
- c. Addressing climate change is a priority for researchers in my university
- d. Other researchers in my university do not know how to address climate change in their roles
- e. Other researchers in my university are reluctant to address climate change in their roles

8) Which groups do you think should be responsible for addressing climate change in universities?

[Low responsibility = 1, medium responsibility = 2, high responsibility = 3] Order will be randomised

- a. Early career researchers
- b. Senior academics and researchers
- c. Research institutions themselves (e.g. universities and colleges)
- d. Funding bodies (e.g. research councils)
- e. Publishers

Appendices

- f. Government and policymakers
- g. Other (please specify): [Open text box]

9) What do you know about what your university is doing to address climate change?

[Text box – open question]

10) Some universities have declared climate emergencies, stating their commitment to reducing carbon emissions. To what extent do you think this is making a difference in addressing climate change at universities?

[Single answer]

- a. Not at all = 1
- b. Only a little = 2
- c. Moderate amount = 3
- d. A great deal = 4

Section 3: Your engagement with climate change

11) How relevant do you think your subject area is for addressing climate change? [Single answer]

- a. Highly irrelevant = 1
- b. Irrelevant = 2
- c. Somewhat irrelevant = 3
- d. Neither irrelevant nor relevant = 4
- e. Somewhat relevant = 5
- f. Relevant = 6
- g. Highly relevant = 7

12) How relevant do you think your role as a researcher is for addressing climate change? [Single answer]

- a. Highly irrelevant = 1
- b. Irrelevant = 2
- c. Somewhat irrelevant = 3

Appendices

- d. Neither irrelevant nor relevant = 4
- e. Somewhat relevant = 5
- f. Relevant = 6
- g. Highly relevant = 7

13) In your role as a researcher, do you think your work has or could have a positive impact in addressing climate change? [Single answer]

- a. Yes = 1
- b. No = 2 [skip Q14]
- c. Not sure = 3

14)[If yes/not sure to Q13] How do you think you could use your role to positively address climate change? Please rank the following items, with 1 being the highest impact and 10 being the lowest impact. Drag and drop each item to rank them. [Rank order. Order will be randomised]

- a. Professional practice (applying sustainability principles to your work)
- b. Personal action (using knowledge gained in your role to inform your personal actions)
- c. Research and scholarship (directly researching about climate change)
- d. Teaching others (directly teaching about climate change)
- e. Application of knowledge/innovation (practical implications of your research beyond your institution)
- f. Secondment opportunities
- g. Community engagement (working with people or organisations outside of the university)
- h. Campaigning and mobilisation
- i. Awareness raising with the public
- j. Campus sustainability (engaging in university climate change processes)

15) How worried are you about climate change? [Single answer]

- a. Not at all worried = 1
- b. Not very worried = 2

Appendices

- c. Somewhat worried = 3
- d. Very worried = 4
- e. Extremely worried = 5

16) To what extent do your own views about climate change affect your practices, choices and activities at work? [Single answer]

- a. Not at all = 1
- b. Only a little = 2
- c. Moderate amount = 3
- d. A great deal = 4

17) To what extent do you think it is appropriate for researchers to advocate for university action on climate change? University action relates to universities' own impacts and emissions, including research and teaching. [Single answer]

- a. Not at all = 1
- b. Only a little = 2
- c. Moderate amount = 3
- d. A great deal = 4

Section 4: Challenges and opportunities within universities

18) To what extent do you want to do more on climate change within your university? [Single answer]

- a. Not at all = 1
- b. Only a little = 2 [skip Q20]
- c. Moderate amount = 3 [skip Q20]
- d. A great deal = 4 [skip Q20]

19) Why do you not want to do more on climate change? [Skip Q21 and Q22]

[Text box – open question]

Appendices

20) Do you face any barriers to doing more on climate change? [Single answer]

- a. Yes = 1
- b. No = 2 [skip Q21]
- c. Not sure = 3

21) In your view, what barriers do you face in doing more on climate change through your role in the university? Please select all that apply.

[multiple choice, multiple answer. Order will be randomised]

- a. Lack of staff expertise
- b. Lack of staff interest
- c. Lack of student interest
- d. Inflexible research frameworks
- e. Inflexible university processes
- f. Lack of agency or power
- g. Lack of materials/resources
- h. Lack of professional development
- i. Lack of projects on climate change
- j. High workload
- k. Pressure to travel
- l. Uncertainty about what actions to take
- m. Lack of institutional support
- n. Lack of legislative initiatives / requirements
- o. Lack of funding for climate related research
- p. Too much professional risk
- q. Other: (please specify)

22) In your view, what would incentivise you to do more on climate change through your role in the university? Please select all that apply. [multiple

choice, multiple answer. Order will be randomised]

- a. Greater staff expertise
- b. Greater staff interest

Appendices

- c. Greater student interest
- d. Different research frameworks
- e. Different university processes
- f. Greater agency or power
- g. Different materials/resources
- h. More professional development
- i. More projects on climate change
- j. Reduced workload
- k. Less pressure to travel
- l. Knowledge of what actions to take
- m. More institutional support
- n. More legislative initiatives / requirements
- o. More funding for climate related research
- p. Less professional risk
- q. Other: (please specify)
- r. Nothing would incentivise me to do more [exclusive answer]

23) In your view, what opportunities are there for your university to better incorporate climate change into your research practices? By research practices, we mean anything that you do as a researcher as part of your role.

[Text box – open question]

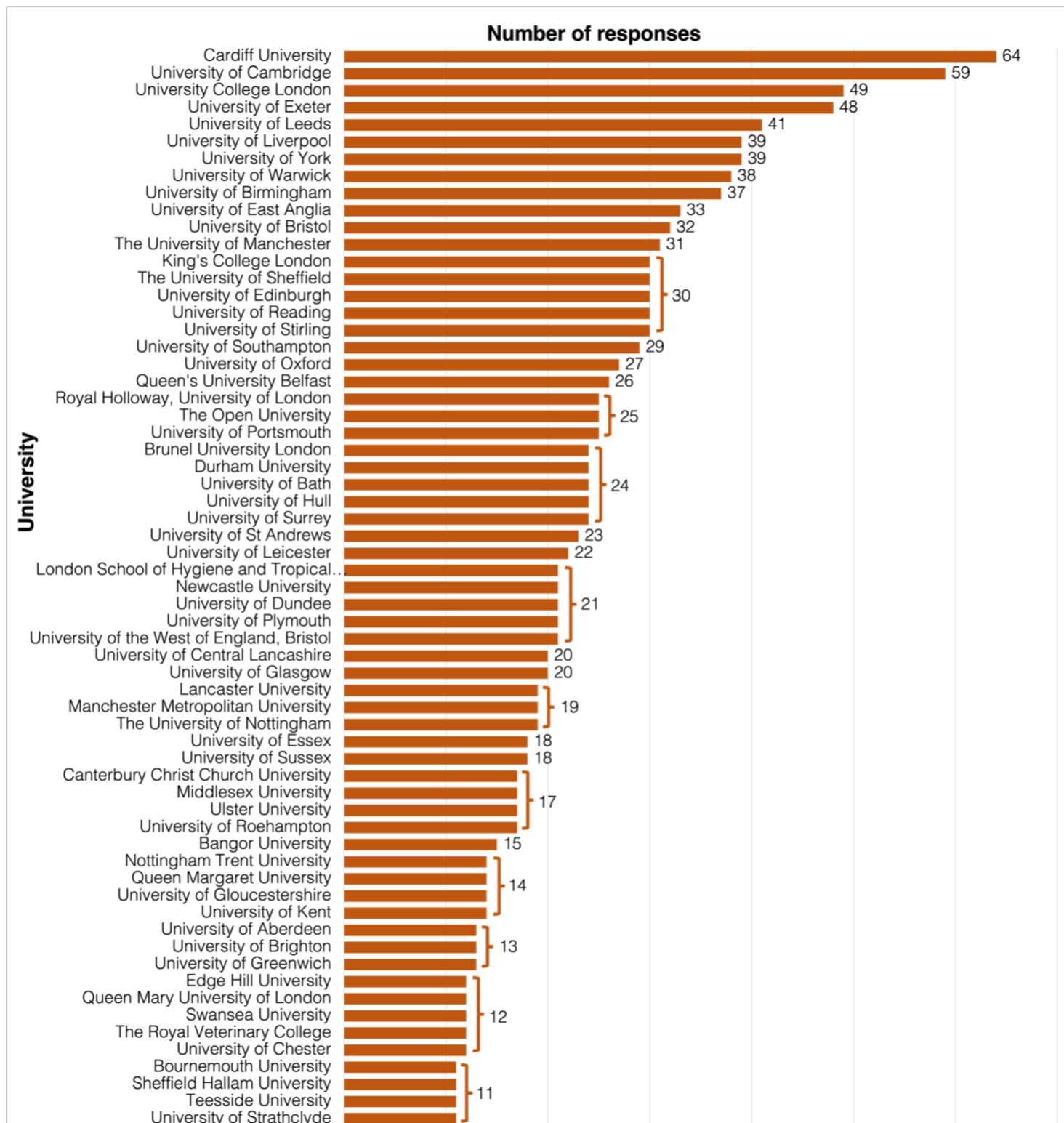
24) As an individual, what actions do you think you could take to better incorporate climate change into your research practices?

[Text box – open question]

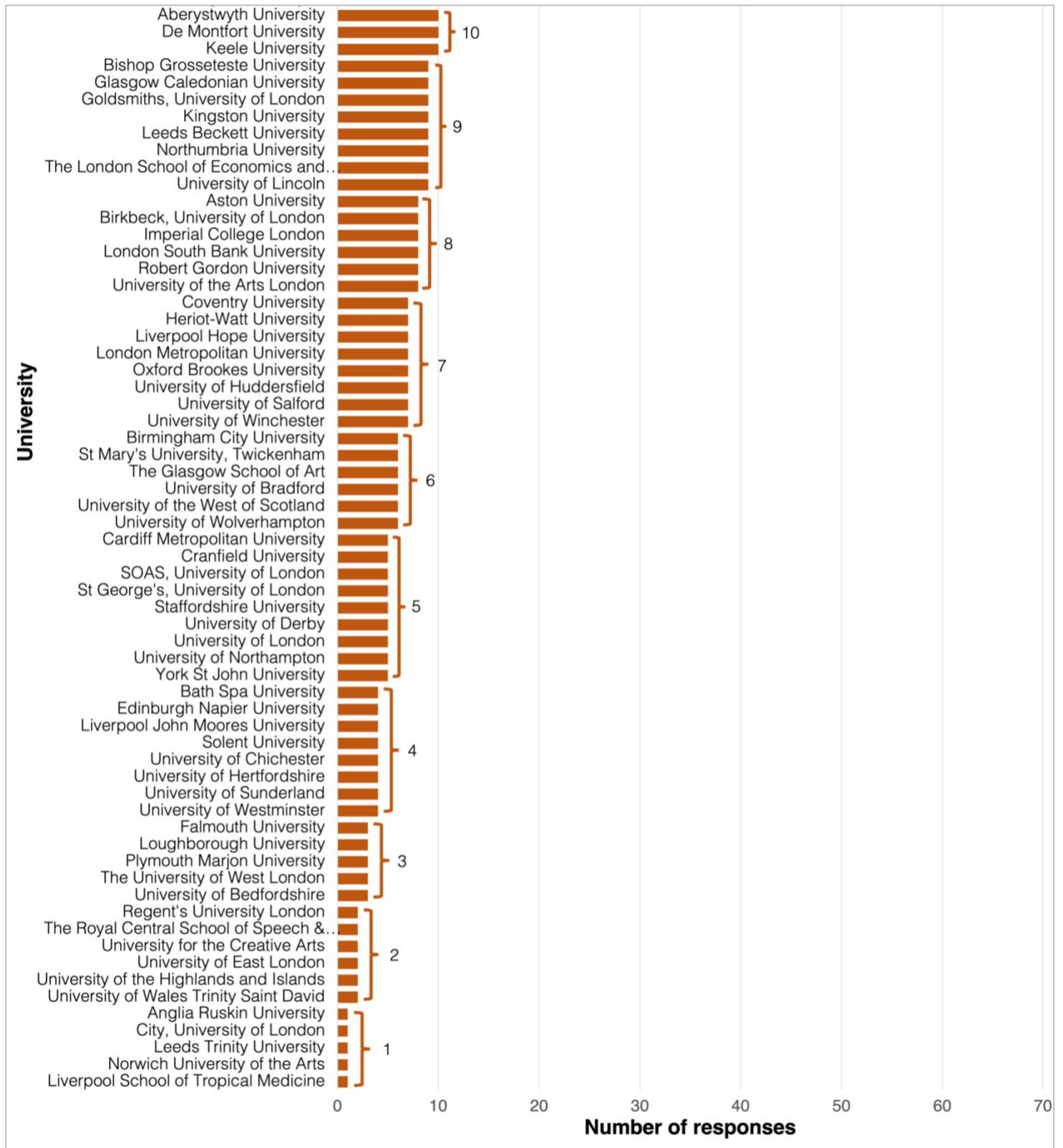
25) Do you have anything else you would like to add?

[Text box – open question]

D3 Number of survey responses per university



Appendices



D4 Pairwise comparisons between rank items for question 14

Table 16. Pairwise comparisons between rank items for question 14.

Q14 How do you think you could use your role to positively address climate change? Please rank the following items, with 1 being the highest impact and 10 being the lowest impact. Pairwise comparisons: Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.
Teaching others-Professional practice	0.22	0.116	1.894	0.058	1.000
Teaching others-Research and scholarship	0.396	0.116	3.413	0.001	0.029
Teaching others-Application of knowledge/innovation	-0.546	0.116	-4.705	0.000	0.000
Teaching others-Community engagement	-0.572	0.116	-4.927	0.000	0.000
Teaching others-Personal action	0.762	0.116	6.561	0.000	0.000
Teaching other-Campus sustainability	-0.837	0.116	-7.213	0.000	0.000
Teaching others-Awareness raising with the public	-0.938	0.116	-8.081	0.000	0.000
Teaching others-Campaigning and mobilisation	-2.231	0.116	-19.214	0.000	0.000
Teaching others-Secondment opportunities	-4.144	0.116	-35.693	0.000	0.000
Professional practice-Research and scholarship	-0.176	0.116	-1.52	0.129	1.000
Professional practice-Application of knowledge/innovation	-0.326	0.116	-2.812	0.005	0.222
Professional practice-Community engagement	-0.352	0.116	-3.034	0.002	0.109
Professional practice-Personal action	-0.542	0.116	-4.667	0.000	0.000
Professional practice-Campus sustainability	-0.618	0.116	-5.32	0.000	0.000
Professional practice-Awareness raising with the public	-0.718	0.116	-6.187	0.000	0.000
Professional practice-Campaigning and mobilisation	-2.011	0.116	-17.321	0.000	0.000

Appendices

Professional practice-Secondment opportunities	-3.924	0.116	-33.799	0.000	0.000
Research and scholarship-Application of knowledge/innovation	-0.15	0.116	-1.292	0.196	1.000
Research and scholarship-Community engagement	-0.176	0.116	-1.514	0.130	1.000
Research and scholarship-Personal action	0.365	0.116	3.148	0.002	0.074
Research and scholarship-Campus sustainability	-0.441	0.116	-3.8	0.000	0.007
Research and scholarship-Awareness raising with the public	-0.542	0.116	-4.667	0.000	0.000
Research and scholarship-Campaigning and mobilisation	-1.835	0.116	-15.801	0.000	0.000
Research and scholarship-Secondment opportunities	-3.748	0.116	-32.279	0.000	0.000
Application of knowledge/innovation-Community engagement	-0.026	0.116	-0.222	0.825	1.000
Application of knowledge/innovation-Personal action	0.215	0.116	1.856	0.064	1.000
Application of knowledge/innovation-Campus sustainability	-0.291	0.116	-2.508	0.012	0.547
Application of knowledge/innovation-Awareness raising with the public	-0.392	0.116	-3.375	0.001	0.033
Application of knowledge/innovation-Campaigning and mobilisation	-1.685	0.116	-14.509	0.000	0.000
Application of knowledge/innovation-Secondment opportunities	-3.598	0.116	-30.987	0.000	0.000
Community engagement-Personal action	0.19	0.116	1.634	0.102	1.000
Community engagement-Campus sustainability	-0.265	0.116	-2.286	0.022	1.000
Community engagement-Awareness raising with the public	-0.366	0.116	-3.154	0.002	0.073

Appendices

Community engagement-Campaigning and mobilisation	-1.659	0.116	-14.287	0.000	0.000
Community engagement-Secondment opportunities	3.572	0.116	30.766	0.000	0.000
Personal action-Campus sustainability	-0.076	0.116	-0.652	0.514	1.000
Personal action-Awareness raising with the public	-0.176	0.116	-1.52	0.129	1.000
Personal action-Campaigning and mobilisation	-1.469	0.116	-12.653	0.000	0.000
Personal action-Secondment opportunities	-3.382	0.116	-29.132	0.000	0.000
Campus sustainability-Awareness raising with the public	0.101	0.116	0.868	0.386	1.000
Campus sustainability-Campaigning and mobilisation	1.393	0.116	12.001	0.000	0.000
Campus sustainability-Secondment opportunities	3.307	0.116	28.48	0.000	0.000
Awareness raising with the public-Campaigning and mobilisation	1.293	0.116	11.133	0.000	0.000
Awareness raising with the public-Secondment opportunities	3.206	0.116	27.612	0.000	0.000
Campaigning and mobilisation-Secondment opportunities	1.913	0.116	16.478	0.000	0.000

There are significant differences between:

- The 1st ranked item (teaching others) and the 4th ranked item and below
- The 2nd ranked item (professional practice) and the 6th ranked item and below
- The 3rd ranked item (research and scholarship) and the 7th ranked item and below
- The 8th ranked item (awareness raising with the public) and the top three ranked items (teaching others, professional practice, research and scholarship) and the bottom two items
- The bottom two items (campaigning and mobilisation, secondment opportunities) and all other items (including each other)

Appendices

There are (overlapping) clusters of items which are quite closely grouped together and therefore there are no significant differences between:

- The top three ranked items (teaching others, professional practice, research and scholarship)
- The 2nd, 3rd, 4th and 5th ranked items (professional practice, research and scholarship, application of knowledge/innovation, community engagement)
- The 3rd, 4th, 5th and 6th ranked items (research and scholarship, application of knowledge/innovation, community engagement, personal action)
- The 4th, 5th, 6th and 7th ranked items (application of knowledge/innovation, community engagement, personal action, campus sustainability)
- The 5th, 6th, 7th, and 8th ranked items (community engagement, personal action, campus sustainability, awareness raising with the public)

D5 Holm-Bonferroni correction list

Table 17. Hypotheses and exploratory questions that were grouped for Holm-Bonferroni corrections.

Hypotheses (H) or exploratory questions (EQ) relating to:			
Climate and non-climate researchers	Subject area	Current position	Climate emergency declarations
H1a	EQ1 (group 1-group 4)	EQ5a	EQ6a
H1b	EQ1 (group 1-group 2)	EQ5b (group 3-group 2)	EQ6b
H2a (<i>t</i> -test)	EQ1 (group 1-group 3)	EQ5b (group 3-group 1)	EQ6c
H2b (<i>t</i> -test)	EQ1 (group 4-group 2)	EQ5b (group 2-group 1)	EQ6d
H2a (Mann-Whitney)	EQ1 (group 4-group 3)	EQ5c (Q8a)	
H2b (Mann-Whitney)	EQ1 (group 2-group 3)	EQ5c (Q8b)	
H3	EQ2 (group 1-group 2)	EQ5c (Q8c)	
H4	EQ2 (group 1-group 3)	EQ5c (Q8d)	
EQ3	EQ2 (group 1-group 4)	EQ5c (Q8e)	
EQ4 (Q21a)	EQ2 (group 2-group 3)	EQ5c (Q8f)	
EQ4 (Q21b)	EQ2 (group 2-group 4)	EQ5d	
EQ4 (Q21c)	EQ2 (group 3-group 4)	EQ5e (Q21a)	
EQ4 (Q21d)		EQ5e (Q21b)	
EQ4 (Q21e)		EQ5e (Q21c)	
EQ4 (Q21f)		EQ5e (Q21d)	
EQ4 (Q21g)		EQ5e (Q21e)	
EQ4 (Q21h)		EQ5e (Q21f)	
EQ4 (Q21i)		EQ5e (Q21g)	
EQ4 (Q21j)		EQ5e (Q21h)	
EQ4 (Q21k)		EQ5e (Q21i)	
EQ4 (Q21l)		EQ5e (Q21j)	
EQ4 (Q21m)		EQ5e (Q21k)	
EQ4 (Q21n)		EQ5e (Q21l)	
EQ4 (Q21o)		EQ5e (Q21m)	
EQ4 (Q21p)		EQ5e (Q21n)	
EQ4 (Q21q)		EQ5e (Q21o)	
		EQ5e (Q21p)	
		EQ5e (Q21q)	
Total: 26	Total: 12	Total: 28	Total: 4

D6 Skewness results for exploratory question 1

Table 18. Skewness results for exploratory question 1

	Skewness	
	Researchers whose universities <i>have</i> declared climate emergencies	Researchers whose universities <i>have not</i> declared climate emergencies
Exploratory question 1a	-.174	-.135
Exploratory question 1b	.041	.033
Exploratory question 1c	-.464	-.285
Exploratory question 1d	.298	.078

D7 Exploratory questions 1a-1d

Exploratory question 1a

A *t*-test was conducted to identify whether researchers think their university is doing enough to address climate change in terms of its own impacts and emissions, depending on whether their institution has declared a climate emergency or not. The result was not significant, $t(1830.051) = 0.113$, $p = .91$. There is no evidence that the perceptions of researchers from universities that have declared (N = 871, M = 4.3, SD = 1.638) and researchers from universities that have not declared (N = 982, M = 4.29, SD = 1.66) differ in this regard.

Exploratory question 1b

A *t*-test was conducted to identify whether researchers say they receive enough information from their university about its own climate action, depending on whether their institution has declared a climate emergency or not. The result was not significant, $t(1834.196) = 0.784$, $p = .433$. There is no evidence that the perceptions of researchers from universities that have declared (N = 871, M = 3.87, SD = 1.609) and researchers from universities that have not declared (N = 982, M = 3.81, SD = 1.649) differ in this regard.

Exploratory question 1c

A *t*-test was conducted to identify whether researchers say climate change is a priority for their university in terms of its own impacts and emissions, depending on whether their institution has declared a climate emergency or not. The result was not significant, $t(1834.165) = 1.816$, $p = .069$. There is no evidence that the perceptions of researchers from universities that have declared (N = 871, M = 4.5, SD = 1.485) and researchers from universities that have not declared (N = 982, M = 4.37, SD = 1.521) differ in this regard.

Exploratory question 1d

A *t*-test was conducted to identify whether researchers say universities' climate emergency declarations are making a difference, depending on whether their institution

Appendices

has declared a climate emergency or not. The result was not significant, $t(1790.842) = 1.084$, $p = .0279$. There is no evidence that the perceptions of researchers from universities that have declared (N = 858, M = 2.29, SD = 0.758) and researchers from universities that have not declared (N = 972, M = 2.25, SD = 0.744) differ in this regard.

D8 Skewness results for hypotheses

Table 19. Skewness results for hypotheses.

	Skewness	
	Climate researchers	Non-climate researchers
Hypothesis 1a	.361	-.422
Hypothesis 1b	-.234	-.110
Hypothesis 2a	-1.926	-.474
Hypothesis 2b	-1.618	-.464
Hypothesis 3	Does not use Likert scale	
Hypothesis 4	-.873	-.683

Results in bold and red are seriously skewed.

D9 Hypothesis 1b

A *t*-test was conducted to identify whether climate researchers, compared to non-climate researchers, think that other researchers in their university know how to address climate change in their roles or not. The result was not significant, $t(1210.698) = -1.622, p = .105$. There is no evidence that climate researchers ($N = 648, M = 4.36, SD = 1.26$) and non-climate researchers ($N = 1205, M = 4.46, SD = 1.135$) differ in their perception of whether they think other researchers know how to address climate change in their roles.

D10 Skewness results for exploratory questions 2-5

Table 20. Skewness results for exploratory questions 2-5.

	Medicine, health and life sciences	Physical sciences, engineering and mathematics	Social sciences	Arts and humanities
Exploratory question 2	-0.401	-0.991	-1.224	-0.806
Exploratory question 3	-0.890	-1.311	-1.226	-1.408
	Climate researchers		Non climate researchers	
Exploratory question 4	-1.662		-0.956	
Exploratory question 5	Does not use Likert scale			

D11 Test Statistics for exploratory question 2

Table 21. Test Statistics from Kruskal-Wallis H test for exploratory question 2.

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
Medicine, health and life sciences- Arts and humanities	-133.19	36.987	-3.601	0	0.002
Medicine, health and life sciences- Physical sciences, engineering and mathematics	-270.11	34.95	-7.728	0	0
Medicine, health and life sciences- Social sciences	-323.696	30.373	-10.657	0	0
Arts and humanities-Physical sciences, engineering and mathematics	136.92	40.896	3.348	0.001	0.005
Arts and humanities-Social sciences	190.506	37.06	5.14	0	0
Physical sciences, engineering and mathematics-Social sciences	-53.586	35.028	-1.53	0.126	0.756
<p>Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.</p> <p>Asymptotic significances (2-sided tests) are displayed. The significance level is .050.</p> <p>^a Significance values have been adjusted by the Bonferroni correction for multiple tests.</p>					

Note that the adjusted significance was automated by SPSS and is not the manual Holm-Bonferroni correction that has been calculated.

D12 Test Statistics for exploratory question 3

Table 22. Test Statistics from Kruskal-Wallis H test for exploratory question 3.

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
Medicine, health and life sciences-Physical sciences, engineering and mathematics	-50.916	31.646	-1.609	0.108	0.646
Medicine, health and life sciences-Social sciences	-88.491	27.492	-3.219	0.001	0.008
Medicine, health and life sciences-Arts and humanities	-113.993	33.46	-3.407	0.001	0.004
Physical sciences, engineering and mathematics-Social sciences	-37.575	31.716	-1.185	0.236	1
Physical sciences, engineering and mathematics-Arts and humanities	-63.078	37.009	-1.704	0.088	0.53
Social sciences-Arts and humanities	-25.502	33.527	-0.761	0.447	1
<p>Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.</p> <p>Asymptotic significances (2-sided tests) are displayed. The significance level is .050.</p> <p>^a Significance values have been adjusted by the Bonferroni correction for multiple tests.</p>					

Note that the adjusted significance was automated by SPSS and is not the manual Holm-Bonferroni correction that has been calculated.

D13 Non-significant results for exploratory question 5

The Chi-Square test results showed that differences between climate and non-climate researchers were not significant for 13 (out of 17) barriers, on the basis of the Holm-Bonferroni method:

- Other please specify: $X^2(1, N = 1,853) = 6.004, p = 0.014$
- Lack of student interest: $X^2(1, N = 1,853) = 5.766, p = 0.016$
- High workload: $X^2(1, N = 1,853) = 4.107, p = 0.043$
- Lack of staff interest: $X^2(1, N = 1,853) = 2.782, p = 0.095$
- Lack of agency or power: $X^2(1, N = 1,853) = 2.109, p = 0.146$
- Lack of projects on climate change: $X^2(1, N = 1,853) = 1.845, p = 0.174$
- Too much professional risk: $X^2(1, N = 1,853) = 1.590, p = 0.207$
- Lack of institutional support: $X^2(1, N = 1,853) = 1.459, p = 0.227$
- Inflexible research frameworks: $X^2(1, N = 1,853) = 1.378, p = 0.241$
- Pressure to travel: $X^2(1, N = 1,853) = .673, p = 0.412$
- Lack of professional development: $X^2(1, N = 1,853) = .193, p = 0.66$
- Lack of materials/resources: $X^2(1, N = 1,853) = .165, p = 0.675$
- Lack of legislative initiatives/requirements: $X^2(1, N = 1,853) = .008, p = 0.928$

The Kruskal-Wallis H test to identify whether there was a difference in the number of barriers between each group was not significant. The different groups are climate researchers ($N = 648$) and non-climate researchers ($N = 1,205$).

The data distribution for each group is the same shape, as assessed by visual inspection of bar charts, therefore the test must compare medians rather than mean ranks (Laerd Statistics, n.d.). The result is not statistically significant, $H(1) = .43, p = .835$, and the median score for both groups was 4.

D14 Skewness results for exploratory question 6.

Table 23. Skewness results for exploratory question 6.

	Early career	Mid-career	Senior/ professor
Exploratory question 6a	-.776	-1.107	-1.035
Exploratory question 6b	-.288	-.255	-.292
Exploratory question 6c (Q8a)	.060	.120	-.013
Exploratory question 6c (Q8b)	-.549	-.613	-.844
Exploratory question 6c (Q8c)	-2.406	-2.064	-1.890
Exploratory question 6c (Q8d)	-1.495	-1.615	-1.800
Exploratory question 6c (Q8e)	-.380	-.310	-.257
Exploratory question 6c (Q8f)	-3.940	-3.402	-3.047
Exploratory question 6d	-1.069	-1.074	-1.143
Exploratory question 6e	Does not use Likert scale		

Results in bold and red are seriously skewed.

D15 Non-significant results for exploratory question 6a

A Kruskal-Wallis H test was conducted to identify whether there was a difference between researchers' current position and the extent to which they want to address climate change through their role in the university. The different groups are early career (group 1, N = 799), mid-career (group 2, N = 530) and senior/professor (group 3, N = 487). Participants who chose 'other' are not included.

The data distribution for each group is the same shape, as assessed by visual inspection of bar charts, therefore the test must compare medians rather than mean ranks (Laerd Statistics, n.d.). The result is not statistically significant, $H(2) = .967$, $p = .617$, and the median score for all groups was 6. This shows that there are no statistically significant differences between the groups and therefore multiple comparisons were not performed in SPSS.

D16 Test Statistics for exploratory question 6b

Table 24. Test Statistics for exploratory question 6b: Whether researchers feel they know how to address climate change as part of their role in the university.

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
Senior or professor-Mid career	220.821	32.386	6.818	>.001	.000
Senior or professor-Early career	276.231	29.654	9.315	.000	.000
Mid career-Early career	55.411	28.896	1.918	0.055	0.165

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.

Asymptotic significances (2-sided tests) are displayed. The significance level is .050.

^a Significance values have been adjusted by the Bonferroni correction for multiple tests.

Note that the adjusted significance was automated by SPSS and is not the manual Holm-Bonferroni correction that has been calculated.

D17 Test Statistics for exploratory question 6c

Table 25. Test Statistics for exploratory question 6c: Responsibility of senior academics and researchers.

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
Early career-Mid career	-32.603	26.268	-1.241	0.215	0.644
Early career-Senior or professor	-114.742	26.974	-4.254	0	0
Mid career-Senior or professor	-82.139	29.442	-2.79	0.005	0.016

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.

Asymptotic significances (2-sided tests) are displayed. The significance level is .050.

^a Significance values have been adjusted by the Bonferroni correction for multiple tests.

Table 26. Test Statistics for exploratory question 6c: Responsibility of research institutions themselves (e.g. universities and colleges).

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
Senior or professor-Mid career	21.016	21.788	0.965	0.335	1
Senior or professor-Early career	50.066	19.957	2.509	0.012	0.036
Mid career-Early career	29.051	19.435	1.495	0.135	0.405

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.

Asymptotic significances (2-sided tests) are displayed. The significance level is .050.

^a Significance values have been adjusted by the Bonferroni correction for multiple tests.

Note that for both tables, the adjusted significance was automated by SPSS and is not the manual Holm-Bonferroni correction that has been calculated.

D18 Exploratory question 6d

A Kruskal-Wallis H test was conducted to identify whether there was a difference between researchers' current position and how appropriate they think it is for researchers to advocate for university action on climate change. The different groups are early career (group 1, N = 798), mid-career (group 2, N = 530) and senior/professor (group 3, N = 486). Participants who chose 'other' are not included.

The data distribution for each group is the same shape, as assessed by visual inspection of bar charts, therefore the test must compare medians rather than mean ranks (Laerd Statistics, n.d.). The result is not statistically significant, $H(2) = .798, p = .671$, and the median score for all groups was 6. This shows that there are no statistically significant differences between the groups.

D19 Test Statistics for exploratory question 6e

Table 27. Test Statistics for exploratory question 6e.

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
Senior/professor-Mid career	152.273	32.674	4.66	0.000	0.000
Senior/professor-Early career	176.307	29.917	5.893	0.000	0.000
Mid career-Early career	24.034	29.153	0.824	0.410	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.

Asymptotic significances (2-sided tests) are displayed. The significance level is .050.

^a Significance values have been adjusted by the Bonferroni correction for multiple tests.

Note that the adjusted significance was automated by SPSS and is not the manual Holm-Bonferroni correction that has been calculated.

D20 Non-significant results for exploratory question 6e

The Chi-Square test results showed that differences between climate and non-climate researchers were not significant for 9 (out of 17) barriers, on the basis of the Holm-Bonferroni method:

- Lack of staff interest: $X^2 (2, N = 1,443) = 8.734, p = .013$
- Lack of legislative initiatives/requirements: $X^2 (2, N = 1,443) = 8.415, p = .015$
- Inflexible university processes: $X^2 (2, N = 1,443) = 8.028, p = .018$
- Lack of professional development: $X^2 (2, N = 1,443) = 7.59, p = .022$
- Lack of student interest: $X^2 (2, N = 1,443) = 3.23, p = .199$
- Lack of funding for climate related research: $X^2 (2, N = 1,443) = 0.634, p = .728$
- Pressure to travel: $X^2 (2, N = 1,443) = 0.596, p = .742$
- Other please specify: $X^2 (2, N = 1,443) = 0.413, p = .814$
- Lack of staff expertise: $X^2 (2, N = 1,443) = 0.299, p = .861$