

## Submissions Abstract Book - All Papers (All Submissions)

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Climate change and the role of the university

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**Research Domain:** International Perspectives and context (IPC)

**Abstract:** Climate change is one of the foremost challenges of our time, and despite the weight of available evidence, the global response as yet has left much to be desired. Universities are at the forefront of climate science and development of new technologies to mitigate and help communities adapt to the changes. Yet the role of universities goes far beyond climate science. This paper provides a theoretical mapping of the complex set of relationships between higher education and climate change. It presents a framework of five modalities of the university: education, knowledge production, public debate, service delivery and embodiment. In relation to these modalities, it then explores the nature and extent of each across different types of institution, the interactions between them and the pathways of impact on society. Finally, implications are drawn out for higher education policy and practice in addressing the current climate crisis.

**Paper:** The report published by the Intergovernmental Panel on Climate Change (IPCC 2018) presents evidence showing that, unless fossil fuel use is eradicated by 2050, the world faces a temperature rise of at least 2°C from preindustrial levels. These changes will inevitably lead to rising sea levels, placing low-lying countries and cities at severe risk, and increases in extreme weather patterns, threats to agriculture and food security, with knock-on likelihood of human conflict over increasingly scarce resources. These impacts will be most critical in lower-income countries, many of which are already suffering from severe disruptions.

Climate change is, needless to say, a highly contested issue. There are some legitimate debates over the extent to which the temperature changes observed are caused by human activity or by natural cycles. Yet those with an interest in staving off concerted action against climate change – most obviously fossil fuel companies – have invested in moulding public opinion towards scepticism of climate change, and influencing political action, with some success (Klein 2015). On an individual level, attachment to the consumerist lifestyle and the relatively slow pace of observable changes in the environment, have led to a lack of urgency – a complacency bolstered by faith in the solutions provided by technological innovation. The sense of urgency has only partly been strengthened by the

recent social movements of Extinction Rebellion and secondary school students led by Swedish activist Greta Thunberg.

Universities are entwined in the climate crisis in a variety of ways. Research on changes in temperature – and sparring between rival factions – takes place largely through universities and their staff, as does the development of new technologies for *mitigation* (e.g. geo-engineering and carbon capture) and *adaptation* to the effects already evident. Yet higher education is implicated much more deeply than through the production of specialist environmental science (Amsler & Facer 2017; Gough & Scott 2007). As part of the education system as a whole, the university is instrumental in shaping the attitudes, knowledge sets and skills of the population, and beyond its direct influence on students, plays a key role in influencing public debate. Given the roots of climate change in political, economic, cultural and epistemic currents – at the micro as well as macro levels – higher education will be central to any proposed global response.

This paper explores this complex set of relationships between higher education and climate change. In doing so, it presents a theoretical framework of five modalities of functioning of universities: education, knowledge production, public debate, service delivery and embodiment (McCowan 2019). These theoretical considerations can inform our understanding of the role that universities have played historically in exacerbating the climate crisis, and how they can participate more effectively in its future resolution.

The first two of the modalities – education and knowledge production – correspond to the university's most recognised functions of teaching students and carrying out research and scholarship. As regards teaching, universities vary considerably in the extent to which climate change features explicitly in taught courses – in specialist environmental areas and more broadly – and whether there are opportunities for engaging with the issues in other spheres of campus life (Leal Filho 2010; Molthan-Hill et al. 2019). There are also important questions of the extent to which climate change is considered to be controversial, and the positionings of lectures and institutions on the contested elements (Lotz-Sisitka et al. 2015). The level and form of knowledge production relating to climate change varies significantly depending on the type of higher education institution in question, and its disciplinary spread (Leal Filho 2017).

Universities have a significant role in relation to public debate on climate change through the contribution of scientific knowledge, but also opinion forming through (social) media engagements, and providing fora for deliberation and debate. In many cases, universities also provide direct delivery of services: for example, consultancy on environmental issues, training for professionals, workshops for community members and environmental protection projects. Finally, there is 'embodiment': this modality refers to the extent to which the institution incorporates and practices the principles it adheres to, most prominently in becoming a sustainable institution through, for example, recycling and reduction of energy waste, and avoidance of investing in fossil fuel companies.

The paper then explores three dimensions of these modalities. First is the nature and extent of activity in relation to each: as alluded to above, higher education institutions diverge significantly across contexts and within systems in terms of the extent to which each of these modalities is engaged with, and in which ways. Second, it is important to understand the interaction between the five modalities: there may be porosity between them (for example, research findings being utilised in teaching, or within community engagement projects) or they can be isolated; they may provide

opportunities for positive synergies, or alternatively be in conflict. The third dimension is impact on society. The influences of the university can be direct, as is the case with the learning acquired by students, or the services delivered directly to a community. In other cases they are indirect, with varying degrees of intensity or diffusion, such as in the case of a technological innovation made available to consumers, the knock-on impacts of the work of graduates from the institution, and the influence of ideas generated by the university in public debate.

Finally, the implications of these theoretical considerations are drawn out for current policy and practice in higher education globally. There are currently a large number of initiatives relating to universities and sustainable development, such as the Talloires Declaration and the UN Higher Education Sustainability Initiative. The *Times Higher Education* has even launched an international ranking based on the Sustainable Development Goals (Bothwell 2018). Yet in many cases these initiatives are countering the more powerful forces and more ingrained practices that characterise higher education institutions and systems around the world. It is these elements – across the multiplicity of functions and interactions of the university, and not purely its research – that we need to engage with if higher education is going to play a significant and positive role in humanity's response to the climate crisis.

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