



Science for change: A survey on the normative and political dimensions of global sustainability research

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ARTICLE INFO

Keywords:
Sustainability
Transformations
Knowledge
Science
Politics
Values

ABSTRACT

Global change and sustainability research increasingly focusses on informing and shaping societal transformations towards more sustainable futures. Doing so, researchers encounter the deeply political and normative dimensions of sustainability problems and potential solutions. This raises questions about the value-dimensions of science itself, as well as the appropriate relationship between science and politics. In this paper, these normative and political dimensions of sustainability research are explored based on a literature review and survey. The survey was completed by 284 researchers participating in the international research platform *Future Earth: Research for Global Sustainability*. The analysis of survey data reveals that sustainability researchers generally acknowledge the value-laden and political nature of their work, yet perspectives on what this means and how to deal with such dimensions vary. Four groups of respondents are distinguished and classified by the following broad narratives: transformative research as speaking truth to power, transformative research as political act, responsibility for rigorous science, and humility on solutions potential. Several tensions within and between these perspectives are identified, pertaining to the role of sustainability researchers in supporting societal transformations, the possibility and desirability of scientific independence and impartiality, and the appropriate relationship between science and politics. The paper concludes by pointing to the need for more explicit engagement with the normative and political dimensions of sustainability research.

1. Introduction

What is the appropriate relationship between science and politics? This question has triggered public and academic debates as old as the history of science itself. It surfaces yet again when we come to think about the role of science in supporting and enabling societal transformations towards sustainable futures.

Global change research has played a major role in advancing our understanding of the earth system and the major socio-environmental challenges faced by humanity today. In recent years, multiple inter-linked processes have pushed the research community to shift its focus from understanding global environmental problems towards advancing solutions for sustainable futures (Belmont Forum et al., 2011; De Pryck and Wanneau, 2017; European Science Foundation, 2012; Kowarsch and Jabbour, 2017; van der Hel and Biermann, 2017). A key example is the international research platform *Future Earth: Research for Global Sustainability* which aims to support scientific knowledge production in pursuit of global sustainability (Future Earth, 2014; Moser, 2016). However, the ambitious objective to support societal transformations requires not only a change in research practices and the organisation of

knowledge systems (Cornell et al., 2013; van der Hel, 2016), but also involves direct engagement with normative questions of what sustainable futures look like and how they can best be achieved (Kläy et al., 2015; Miller, 2013; Patterson et al., 2017; Schlaile et al., 2017; Schneidewind et al., 2016; Tschakert et al., 2016). In this context, the classic distinction between science and politics – where science attends to matters of facts and truth, whereas politics is about values, interests and power – appears misplaced (Lövbrand et al., 2015; Turnhout et al., 2016). Yet, how can and should researchers engage with the deeply normative and political dimensions of sustainability?

The answer to this question is anything but trivial. Yet, although arguably at the core of a transformative approach to sustainability, questions of values and power in sustainability research have received limited attention in the academic literature (Lövbrand et al., 2015; Turnhout et al., 2016; van Kerkhoff and Lebel, 2006; West, 2016). There are some notable exceptions, such as a study by Milkoreit et al. (2015) discussing values in resilience scholarship and by Miller (2013) discussing normative dimensions of sustainability science. However, we do not know how the vastly increasing and diverse community of sustainability researchers grapples with the normative and political

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dimensions of their work. Given the transformative potential of sustainability research, this lack of attention to questions of values and politics is highly surprising and reason for concern (Rosendahl et al., 2015). Therefore, this paper aims to make these pertinent dimensions explicit and explore perspectives among sustainability researchers with respect to the normative orientation of science, the relationship between science and politics, and the role of sustainability research in society.

The research question for this paper is therefore as follows: how do sustainability researchers perceive and engage with normative and political dimensions of their work? Normative dimensions, in this study, refers to the value-laden context, processes and consequences of sustainability research. Political dimensions refers to the related implicit and explicit choices that shape both sustainability research and its consequences for the way sustainability problems are understood and governed.

The paper builds on the result of a survey conducted among researchers engaged in the global research platform *Future Earth: Research for Global Sustainability*. The survey was informed by a literature review identifying different ways in which normative and political aspects are entangled in sustainability research (section 2). The survey approach was adopted with the aim to get an overview of different perceptions and attitudes within a diverse community of researchers. Section 3 introduces the research design, focus of the survey and method of data collection and analysis. Combining quantitative and qualitative analysis, four distinct clusters of respondents are identified reflecting different perceptions on sustainability research (presented in section 4). The discussion (section 5) elaborates on several core tensions and the conclusion (section 6) encourages more explicit engagement with the normative and political dimensions of sustainability research.

2. Theoretical context

2.1. Action, solutions and societal change in sustainability research

Global change and sustainability research have become increasingly concerned with action, solutions and societal change (Future Earth, 2014; Lahsen, 2016; van Kerkhoff and Lebel, 2006; West, 2016). Global change and sustainability research build on a long tradition of describing and explaining major earth system transformations and societal change processes. Yet, researchers today are increasingly challenged to advance the resolution of pressing sustainability problems and inform transformations towards sustainability (Berker and Bharathi, 2012; De Pryck and Wanneau, 2017; Miller et al., 2014; Wiek et al., 2012). As such, the focus of sustainability research is, at least in rhetoric, shifting from research *on* sustainability to research *for* sustainability (Jerneck et al., 2011; Miller, 2013; Schneidewind et al., 2016). This shift in focus is accompanied with the claim that the responsibility of researchers should be extended from producing rigorous knowledge to the implementation of knowledge in society (Fazey et al., 2014; Mauser et al., 2013). In that sense, science is recognized as an

active process of intervention with the ability to inform and facilitate societal transformations in order to avoid catastrophic environmental change (Fazey et al., 2018).

The turn towards transformative and solutions-oriented sustainability research does not stand on its own. Rather, this development should be understood in a broader perspective of debates about the changing role of science in society. Notions of Mode-2 knowledge production (Nowotny et al., 2003), transdisciplinarity (e.g. Klein, 2014) and post-normal sciences (Funtowicz and Ravetz, 1993) are influential descriptions of changes in science towards a system where knowledge production is more socially robust, increasingly interdisciplinary and co-produced with societal actors. Such perspectives on scientific knowledge production, however, stands in tensions with historically developed norms of science as objective, universal, value-free, and independent from contexts. The boundary between universal science (objective, autonomous, disinterested) and societal context (values, norms, interests) drawn by such Mertonian norms of science is difficult to uphold for knowledge production that directly engages with complex, value-laden and urgent real-world issues (Caniglia et al., 2017; Funtowicz and Ravetz, 1993; Lang et al., 2012).

Relating to these broader debates, scholars of sustainability science have argued that a transformative and solutions-oriented approach to sustainability research requires that researchers ‘step out of their academic comfort zone’ of objectivity and independence (Miller et al., 2014; Wittmayer and Schöpke, 2014). Instead, researchers should directly and reflexively engage with the normative and political dimensions of their work. In this context, Fazey et al. (2018) argue that sustainability researchers “need to be able to take into account normative aspects, inequalities, politics and power, and work more directly across the interface of science and practice” (Fazey et al., 2018, p. 55). At the same time, concerns exist about the ambitious objectives and promises contained in the narrative of transformative and solutions-oriented sustainability research. In particular, scholars have identified the need to be humble about the capacity of science to provide solutions for complex societal challenges (Kläy et al., 2015; Lövbrand et al., 2015; Stirling, 2014), and warn about the dangers of solutionism, where every problems appears to have a single solution and the role of values and power is ignored (Strohschneider, 2014). Moreover, some scholars have expressed concerns that the credibility and authority of science could be undermined by its direct engagement with value-laden discussions and political debates (Lacey et al., 2015; Milkoreit et al., 2015; Clark et al., 2016).

2.2. Normative and political dimensions of sustainability research

The transformative and solutions-oriented focus of sustainability research thus foregrounds the importance to take into account normative and political concerns. Yet what are the different ways in which values and politics are entangled in sustainability research? Drawing on sustainability science, science and technology studies, science and policy studies and environmental governance literature, I distinguish four

Table 1
Normative and political dimensions of sustainability research.

Dimension	Key points	Relevance for sustainability research(ers)
I Normative and political context of sustainability research	<ul style="list-style-type: none"> ● Sustainability as a normative aspiration ● Context of competing interests and power asymmetries 	<ul style="list-style-type: none"> ● Values and politics as part of problem identification and analysis ● Relationship between research and political context
II Standpoint and values of researcher	<ul style="list-style-type: none"> ● Knowledge claims are socially situated and partial ● Standpoint of researcher influences research process and outcomes 	<ul style="list-style-type: none"> ● Awareness of epistemic and normative positionality ● Importance of transparency and reflexivity
III Power structures and asymmetries	<ul style="list-style-type: none"> ● Power asymmetries in society affect scientific knowledge production 	<ul style="list-style-type: none"> ● Influence on research agendas and outcomes ● Risk of reproducing dominant discourses
IV (Epistemic) power of scientific knowledge	<ul style="list-style-type: none"> ● Science influences societal and political debates in complex and important ways 	<ul style="list-style-type: none"> ● Responsibility of researchers ● Role in political debates

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