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Research Policy

journal homepage: www.elsevier.com/locate/respol

Research paper

From invisibility to impact: Recognising the scientific and societal relevance of interdisciplinary sustainability research

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ARTICLE INFO

Keywords:

Sustainability research
Impact assessment
Knowledge
Science-society relations

ABSTRACT

Academics are increasingly expected to produce concrete and directly applicable solutions to hard-to-solve ‘real-world problems’ such as poverty, development, and environmental degradation. However, conventional assessments of the impact of science on society have not yet been adequately adapted to capture the diverse effects of this type of problem-centred research. Drawing on a case study of a large-scale project on (un)sustainable consumption, this paper demonstrates the range, complexity and potential long-term nature of impact in interdisciplinary sustainability research. It thus supports arguments for alternative approaches to impact assessment that question conventional views of translating scientific knowledge into action, value the multi-directionality of science-society relations and recognise diverse forms of engagement between scientists and non-scientific actors through non-academic channels and outputs. The paper also challenges common (mis)conceptions of work practices in a university context by demonstrating the highly innovative and inclusive nature of much sustainability research that seeks to address the needs of diverse communities of actors. It is argued that only radically different ways of conceptualising and measuring short-, medium- and long-term impacts can capture the success or otherwise of social-scientific and interdisciplinary sustainability research.

1. Introduction

Pressure is mounting on many academics to produce societally relevant and ‘usable’ knowledge and to actively engage with non-academic actors who are looking for answers to major global challenges such as poverty, development, and environmental degradation (Fischer-Kowalski and Swilling, 2011; Khoo, 2013; Fahy and Rau, 2013b; Clark et al., 2016). For example, those engaged in social-scientific and interdisciplinary sustainability research are frequently tasked with the development and dissemination of concrete, politically acceptable and directly implementable solutions to pressing socio-environmental problems, including growing overconsumption of natural resources, or the unequal distribution of environmental risks globally (Schäfer et al., 2010; Pape et al., 2011; Blättel-Mink et al., 2013; Kirchhoff et al., 2013; Russell-Smith et al., 2015; Defila and Di Giulio, 2016; McNie et al., 2016; Lorek and Spangenberg, 2014). The desire to enhance the relevance of research and to demonstrate ‘value for money’ is also reflected in the growing number of public and private funding bodies whose financial support for research projects comes with more or less concrete stipulations concerning the evaluation of their impact on science and society. For example, the European Commission’s (2006)

White Paper on Communication outlined how scientists have a duty to share their new-found knowledge with a broader public, and that this needs to be prioritised both during projects and as part of subsequent impact assessment.

While this emphasis on ‘research that matters’ has proven beneficial in some respects, major drawbacks have also emerged that merit closer scrutiny. For instance, the increasing marginalisation of basic research or ‘research for research’s sake’ that may or may not have any direct applications has been criticised. Similarly, an extensive and increasingly protracted debate is underway concerning how different science, arts and humanities subjects contribute in very diverse and sometimes contradictory ways to the development of society, and how this diversity cannot be adequately captured through economic impact assessments that disproportionately benefit the STEM subjects. For example, Belfiore (2015) calls upon arts and humanities scholars ‘to resist the economic doxa, and to reclaim and reinvent the impact agenda as a route towards the establishment of new public humanities’ (p.95). The increasingly applied nature of much sustainability research has also raised questions about how to define and measure its societal impact. Growing scepticism among those who view the introduction of impact assessment as a sign of the expanding influence of exclusively economic

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Received 12 May 2017; Received in revised form 31 August 2017; Accepted 13 November 2017

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concerns and new public management in academia has fuelled this discourse (Waitere et al., 2011; Belfiore, 2015).

Expectations concerning the exchange of knowledge between science and policy, including through knowledge coproduction (Clark et al., 2016), also closely relate to issues of ‘impact’ and its measurement. For example, while policy-makers often need to find solutions to particular issues (solutions that fit into problem-centred ‘policy narratives’), researchers strive for scientific excellence in ways that are not necessarily measured by real-world impact (Walter et al., 2007; Sedlacko et al., 2013). The main purpose of this paper is to critically reflect on what constitutes impact in social-scientific and interdisciplinary sustainability research, and how it can be meaningfully measured¹. Drawing on the authors’ experiences of working on a large-scale interdisciplinary study – CONSENSUS: *consumption, environment and sustainability* –, it examines opportunities and challenges of undertaking innovative policy-relevant sustainability research within the context of an evolving reward system for societal impact that remains firmly focused on narrow conceptions of ‘transferring’ scientific knowledge into society.

The remainder of the paper is divided into five sections. Section 2 captures existing work, and reviews key findings in the literature that relate to working at the science-policy interface and that critically examine the concept of impact. This is followed by a description of the methodology used, combined with details of the CONSENSUS research project (Section 3). Within the results section (Section 4), particular attention is paid to the impact of CONSENSUS on: (1) local and national activities in sustainability/sustainable consumption research; (2) international sustainability research agendas and activities; and (3) sustainability policy and practice. Section 5 critically discusses the scope, quality and measurability of the impact of CONSENSUS, especially regarding the sustainability policy landscape in Ireland. Finally, Section 6 presents a succinct conclusion and some concrete proposals for enhancing the capacity and quality of research-policy-practice exchanges.

2. Sustainability research on the edge: working at the science-policy-practice interface

A marked shift has occurred in both public discourse and research funding towards ‘policy-relevant research’ that provides usable knowledge to tackle societal challenges, including shifting economic and social development towards greater sustainability (Gibbons et al., 1994; Hessels and Van Lente, 2008; Miller et al., 2014; Woods and Gardner, 2011). Notable efforts have thus been made to foster closer links between those who produce scientific knowledge and those who are expected to use it, recrafting traditional science-society linkages in the process. On a conceptual level, the question of what constitutes useful and usable knowledge has received considerable attention. For example, Nowotny (2003) calls for the production of ‘socially robust knowledge’ by establishing a ‘regime of pluralistic expertise’ that involves diverse scientific and non-scientific actors in the creation and application of knowledge. Some authors have described this as a radical change in knowledge production from ‘Mode 1’ or ‘normal’ science towards ‘Mode 2’ or ‘post-normal’ science (Funtowicz and Ravetz, 1993; Gibbons et al., 1994; Hessels and Van Lente, 2008; Kirchhoff et al., 2013). Here, Mode 1 is defined as academic, disciplinary, homogeneous, autonomous and subject to traditional quality control. In contrast, Mode 2 is expected to be transdisciplinary, heterogeneous, reflexive and socially accountable, subject to novel forms of quality control, and generated in a context of application (Hessels and Van Lente, 2008).

On a more practical level, advocates of inter- and transdisciplinary

research have attempted to reduce the gap between science and society (Nowotny et al., 2001; Hirsch-Hadorn et al., 2008; Spaargaren, 2011; Blättel-Mink et al., 2013; Brandt et al., 2013; Pahl-Wostl et al., 2013; Rau and Fahy, 2013; Di Giulio et al., 2014; Defila and Di Giulio, 2016; McNie et al., 2016). According to Kerhoff and Lebel (2006), relationships between scientific knowledge and action constitute ‘arenas of shared responsibility, embedded within larger systems of power and knowledge’ (p. 473), with significant implications for research design. Kirchhoff et al. (2013) present a fourfold typology of users in decision-making roles – early adopters, tentative and proactive users and laggards – as a potential tool for enhancing knowledge-to-action flows in the area of climate information. Finally, transdisciplinary research initiatives led by so-called ‘pracademics’, that is, practitioners-turned-academics (or vice versa), represent concrete efforts to enhance and redirect science-society exchanges (e.g. Shiva, 2002; McKibben, 2007).²

The growing popularity of transdisciplinary sustainability research that involves both scientific and non-scientific actors in the design and implementation of projects has been driven from different angles, including by key actors that shape the institutional context of academic research (Wiek et al., 2012). Funding agencies increasingly favour transdisciplinary projects, and many government agencies ‘outsource’ policy-driven research because it is more flexible and efficient than recruiting and maintaining their own staff. At the same time, academic institutions and their academic staff are facing growing pressure to secure external funding, with the monetary value of research grants now serving as a key metric of academic assessment and achievement (cf. Slaughter and Leslie’s (1997) critique of these manifestations of ‘academic capitalism’). These conditions have created an institutional and financial environment conducive to the rapid expansion of applied, ‘policy-relevant’ research in the sustainability field and beyond.

Aside from these more critical observations, transdisciplinary sustainability research is gaining traction because of its potential to address complex and ostensibly controversial socio-ecological issues (Shove, 2004; Defila and Di Giulio, 2016). Although time consuming and resource intensive, involving different groups of participants in the research process facilitates the (co)production of knowledge at the appropriate spatial (e.g. local, global) and temporal scales (e.g. for immediate or future use) (McNie, 2007; Schönhart et al., 2009) in ways that incorporate their diverse interests (cf. Blättel-Mink et al., 2013 for an illustrative example from Germany). Furthermore, the inclusion of both experiential and academic knowledge increases the likelihood that research findings are relevant and accessible for diverse audiences, which enhances their societal impact (Mårtensson and Mårtensson, 2007; Jaeger-Erben et al., 2015).

Yet, despite the reported benefits of advancing transdisciplinary ‘Mode 2’ knowledge production, many scientists remain reluctant to do so. The reasons for this are manifold, including existing practices within epistemic communities that are hard to shift, a lack of reward systems for academics to engage in applied, policy-relevant research, and a lack of prestige associated with such work. For example, prominent incentive structures associated with the increasingly ‘career driven’ nature of academic work equate publications in peer-reviewed journals with scientific impact (Wiek et al., 2012). This is problematic given that academic papers are often inaccessible to wider audiences and that non-academics need different forms of communication and dissemination (e.g. participatory workshops, public outreach activities) that may not fit within established work practices in a university context (Di Giulio et al., 2014). Also, academics may be hesitant to change their publication practices if they feel that the effects of alternative communication and dissemination measures either remain invisible or continue to be treated as less valuable by those in charge of management

¹ Throughout the paper we use the term ‘impact’ to capture different forms of societal impact. Whenever we talk about scientific impact (e.g. citations, impact factors), this is stated explicitly.

² Note that a commitment to ‘pracademia’ remains relatively rare among sustainability scientists, partly because of the persistence of rather traditional ‘Mode 1’ notions of science that treat any (open) political involvement by scientists with considerable scepticism.

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