Mobilising the Energy-Related Social Sciences and Humanities

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Abstract The energy-related Social Sciences and Humanities (energy-SSH) are commonly overlooked as a central evidence base for energy policy; the traditional Science, Technology, Engineering, and Mathematics (STEM) disciplines instead dominate the setting of policy goals. We argue that energy-SSH are insightful for energy policymaking and thus need more attention. We also make clear that to maximise their impact the considerable differences within energy-SSH need to be embraced rather than glossed over. From this position, we strongly advocate closer working of energy-SSH with STEM, as well as between the energy-SSH disciplines themselves. In illustrating all these points, we discuss the current European Union (EU) energy policy and research funding contexts and also outline our own SHAPE ENERGY project that aims to further the energy-SSH integration agenda across European circles. We finish the chapter with a brief commentary of this book's three core 'Parts', and their constituent chapters, which address different contributions and experiences of utilising energy-SSH.

Keywords Energy policy • Integration • Interdisciplinary • European Union • Horizon 2020 • SHAPE ENERGY

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1.1 THE UNFULFILLED POTENTIAL OF SOCIAL SCIENCES AND HUMANITIES IN DRIVING (EU) ENERGY POLICY

The range and significance of energy policy commitments made across local, regional, national, and international levels have been increasing. Many such commitments focus on guiding us through an ‘energy transition’ that entails energy system-wide changes aimed at various outcomes, be they regarding, for example, lower carbon emissions, increased security, interconnectedness, or affordability (Powell et al. 2015). The successful implementation of these policies and targets implies major changes for how energy is sourced, distributed, and consumed, with impacts for how all stakeholders (e.g. citizens, businesses, policymakers, other policyworkers, etc.) interact with the energy system on a variety of scales (Bridge et al. 2018; Walker and Cass 2007).

The European Union (EU) of course provides an excellent example of a framework within which such policy commitments are actively being made (European Commission 2017). At a strategic level, the EU is guided by its comprehensive integrated climate and energy policy,¹ which includes a number of 2030 targets: at least 40% reduction in emissions from 1990 levels, at least 27% supply from renewable energies, 27% (with a possibility of 30%) increase in energy efficiency, and cross-border interconnections for 15% of the EU’s installed electricity production capacity. Alongside these headline targets, the EU has also constructed numerous policy frameworks, including flagship packages that include various policies within them (e.g. Clean Energy Package for All Europeans²), as well as more specific frameworks that are more targeted in their remit (e.g. Strategic Energy Technology Plan [SET-Plan]³).

Alongside (and indeed sometimes in conjunction with) energy policy goals, there are commitments for new policymaking to be grounded in evidence. For example, the European Commission’s Joint Research Centre (JRC), which is its in-house science advice service, has the core mission of providing ‘EU policies with independent, *evidence-based* scientific and technical support throughout the whole policy cycle’ (JRC in European Commission 2015, p. 5, emphasis added). Whilst we certainly acknowledge that there are debates around the merits/pitfalls of evidence-based policymaking (e.g. Pearce et al. 2014; Cairney 2016), including questions about the extent to which policies can be de-politicised and based on ‘objective’ and ‘single-truth’ evidence (Pielke Jr 2007; Robison and

Foulds 2018), we do nevertheless argue that it is vital to reflect on the role of ‘epistemic communities’⁴ which feed into evidence-gathering exercises and/or represent reference points for justifying energy policy positions. Moreover, we argue that Science, Technology, Engineering, and Mathematics (STEM) disciplines have dominated energy policy discourses in recent decades—including how society is or is not accounted for—as part of an established narrative of focusing on technological development (Guy and Shove 2000; Sovacool et al. 2015; Castree and Waitt 2017; Stirling 2014). Energy-related Social Sciences and Humanities (energy-SSH) disciplines are, in contrast, known to be commonly overlooked in favour of these technologically driven conventional alternatives (Foulds and Christensen 2016).

One aspect of this lack of involvement has arguably been that certain SSH approaches may be seen as representing all of SSH. Whilst bracketing energy-SSH together under the same umbrella term can be helpful in terms of building communities to promote the importance of socially grounded questions in energy, it is critical this does not come at the expense of neglecting the considerable variation within energy-SSH. As Fox et al. (2017, p. 3) note, ‘energy-SSH’ is not one homogenous mass of literature that is in (even approximate) agreement of how society is ordered; differences are everywhere’. We argue that such variation should be embraced, discussed frankly, and brought clearly to non-SSH audiences (including policy- or STEM-based groups), as opposed to imagining that a normalised, one-size-fits-all, homogenous version of SSH exists. This book showcases part of this variety.

Indeed, there are clear differences simply between the energy-related Social Sciences and the energy-related Humanities (Foulds et al. 2017; c.f. Castree et al. 2014, in terms of environmental-SSH). The energy-related Social Sciences (e.g. disciplines like Psychology, Sociology, Political Science) investigate the social organisation of human action, for example, attitudes, values, perceptions, norms, conventions, expectations, and so on, with an increasing interest in how these understandings could directly inform policy interventions. Whereas the energy-related Humanities (e.g. disciplines like History, Law, Theology) are concerned with the fundamental, and typically unspoken, cultural principles that underpin how societies are governed, for example, responsibilities, engagement, participation, (in)equality, equity, ethics, faith, and so on, with lessons for what societies should regard as ‘desirable’ (even if indirectly) when managing

the energy system. There is great variation too within each of these disciplines and sub-disciplines concerning the theorisation and definition of the research problem in the first place (Sovacool and Hess 2017; Foulds and Robison 2017)—and this must not be forgotten.

As Hulme (2011, p. 178) states as part of his argument for overcoming the dominance of STEM and for embracing SSH difference (over consensus), particularly in terms of harnessing the potential of the Humanities: ‘Crafting increasingly consensual reports of scientific knowledge, or leveraging more engineering and technology, will alone never open up pathways from research to the public imagination or the execution of policy’. Whilst his argument concerns climate science, there are inevitable parallels with the role of energy research in energy policy(making).

Discussions should therefore be developed with non-SSH energy research and policy communities on matters of SSH integration—that is, utilisation of key SSH concepts, understandings, methodologies, theoretical frameworks, and so on, in a way that meaningfully represents SSH on its own terms. However, we have found from our own experiences that energy policy-based advocates of ‘interdisciplinarity’ have for too long focused on how energy-SSH can support energy-STEM research, which has typically involved energy-STEM (and/or Economics, as one disputed discipline of the energy-related Social Sciences), setting the agenda for what role energy-SSH should play and thus how that disciplinary integration should be configured. We feel much more needs to be done to start new inclusive conversations on how energy-SSH could begin to take the strategic lead, through focusing more on energy-SSH in and of itself, and by exploring the potential of projects solely spanning insights from across energy-SSH.

In sum, the EU has (as indeed have other communities of policymakers) set significantly challenging commitments to change our energy system for the better. Such changes will inevitably need keen understandings of society’s stakeholders, in terms of how and why they practically interact with all levels and elements of the energy system, as well as what the implications and consequences of those interactions may (or perhaps should) mean for society. Such evidence should be of real interest to those in policy circles and thus energy-SSH research needs to play more of a role somehow, and it is for this reason that this book aims to provide lessons on how energy-SSH should be recognised and better integrated into energy research and policy agendas.

1.2 CONTEXT: SHAPE ENERGY AND THE EUROPEAN COMMISSION'S ENERGY-RELATED SOCIAL SCIENCES AND HUMANITIES WORK

A range of efforts are beginning to be made to undertake this integration work, on the ground. The European Commission's major research and innovation funding programme—Horizon 2020—uses the term ‘Societal Challenges’ to identify the areas of energy, transport, and so on, to which it allocates funding; however, it is the case that SSH expertise (i.e. which centrally considers *societal* processes and outcomes) is awarded a very much smaller proportion of this funding than STEM—4% vs. 96% of the €403M energy Work Programme budget in 2016, for example (European Commission 2018). Various initiatives have been designed to partially address this in recent years, including:

- a set of Horizon 2020 funding calls⁵ explicitly for energy-SSH research, which has led to five dedicated energy-SSH projects being launched since 2016, with two of these represented in this collection (ENERGISE⁶; PROSEU⁷);
- a much larger number of energy topics being ‘SSH-flagged’—that is, identified as needing SSH insights for their effective delivery (however, in 2016 almost 60% of these SSH-flagged energy calls included no partners with majority SSH expertise [European Commission 2018]); and
- a call to build a European Platform for energy-SSH⁸ which could help bring its diverse communities together and, with a stronger voice, build its impact at a range of policy scales.

This latter call led to the creation of SHAPE ENERGY—Social sciences and Humanities for Advancing Policy in European Energy.⁹ This Platform, which we designed and co-lead, began in February 2017 and has worked to develop Europe's expertise in using and applying energy-SSH. Specifically, we have worked to (1) understand and support interdisciplinary integration, (2) promote the role of energy-SSH to a range of stakeholders, and (3) gain greater insight into the needs of those who may wish to utilise energy-SSH, including policymakers. We have organised a range of activities aimed at different groups, often bringing stakeholders together across sectors, including running: academic and city-level

multi-stakeholder workshops, a call for evidence, ‘sandpits’ for current Horizon 2020 consortia, PhD internships, and a Research Design Challenge, to name only a selection.

A significant activity in advancing our understanding of SSH integration for better energy policy has been commissioning this book, or series of ‘think pieces’, with colleagues from outside the SHAPE ENERGY consortium. This think piece book project has prioritised: (1) interdisciplinarity, and (2) collaboration. All pieces are co-authored by three or more researchers, with the discussions and research which fed into each individual chapter involving researchers from multiple European countries and three or more SSH disciplines. A competitive application process was run, with external peer reviewers, to identify which collaborations we should fund—this funding was then used for authors to meet and, in several cases, run events that fed directly into the chapters. The quality was high, which both meant we funded ten pieces rather than the planned eight and approached Palgrave Macmillan about publishing this collection as an open access book, not least because we felt that the contributions deserved wide exposure and would be of use to many.

We hope this book offers those new to SSH, or those interested in deepening their understanding across its span, a sense of the breadth and depth of what SSH can offer. This book will also be submitted to the energy strategy unit within the Directorate-General for Research and Innovation (DG RTD), as an official SHAPE ENERGY deliverable, to inform their ongoing work in the area. The EC has a particular interest in supporting the ‘mainstreaming’ approach whereby meaningful SSH involvement is recognised as needed to increase real-world impact of projects. Insights will also feed into SHAPE ENERGY’s Research and Innovation Agenda 2020–2030, an output highlighting key challenges where energy-SSH can further provide direct leadership. But more broadly, we hope that others (e.g. away from the EC and following the completion of the SHAPE ENERGY project) will also be interested in reading the contributions in this book, including those working in practical energy initiatives aimed at furthering societal aims.

1.3 STRUCTURE OF THIS BOOK

The Forewords, included prior to this Introduction, provide introductory remarks from three invited experts working in and around EU energy policy circles, who give their perspectives on the pressing energy challenges of our time and why SSH is needed to tackle these. The core of the

book, from Chap. 2 onwards, then comprises ten short chapters from a total of 50 contributors. Each chapter is stand-alone and they can thus be read in any order.

The chapters are organised into three Parts, each of which reflects a commonly raised (and inevitably interconnected) theme regarding how energy-SSH can contribute to understanding of and/or working towards (EU) energy policy priorities. Thus, this book explores:

- *Part I.* Energy as a social issue;
- *Part II.* Social Sciences and Humanities in interdisciplinary endeavours; and
- *Part III.* Interplay with energy policymaking environments.

We briefly outline here the structure of these Parts to assist in navigating this collection.

Chapters 2, 3, and 4 in Part I set the scene through making the case for the centrality of social and human dimensions in the energy system. Whilst this is of course implicit throughout this book, these three chapters recognise that there is still a need to expose and highlight such dimensions; otherwise they risk being neglected. Each chapter clearly provides an answer to the request: ‘explain to me why energy is a social issue’. Indeed, Middlemiss et al. (Chap. 2) begin with a powerful case for how qualitative understandings of the lived experience of energy poverty (gained through in-depth work with people) expose the limitations of narrow technical definitions, and can directly inform a more joined-up policy approach. Further, Kerr et al. (Chap. 3) take the case of an emerging technological field—the Marine Renewable Energy industry—and highlight the immediate and wide-ranging nature of the cultural, legal, and political issues surrounding so-called Blue Growth. Aberg et al. (Chap. 4) then take a very direct approach to illustrating how energy affects real lives—including raising issues of fairness and citizenship—through using three fictional stories from women across the world.

Given the social issues at stake, Chaps. 5, 6, 7, and 8 of Part II go on to explore the process of interdisciplinary working which seeks to involve SSH insights or methods, including in STEM-led projects. The chapters both discuss the challenges experienced but also, importantly, the impact interdisciplinary collaborations can have in responding to complex problems through making use of the latest understandings of the embedded relationships between technology and society. Higginson et al. (Chap. 5)

provide a detailed and honest account of their journey through a collaboration that sought to bring together qualitative and quantitative data (on energy use in buildings); they provide several insights of use to cross-disciplinary endeavours. McCarthy et al. (Chap. 6) take the issue of building retrofits, often seen as an engineering problem, and discuss the need for understanding collective decision-making processes and legal frameworks when considering Multi-owned Properties. They recognise specific challenges for interdisciplinary research including when different SSH disciplines come together. Silvest et al. (Chap. 7) consider the concept of ‘Energy Systems Integration (ESI)’, which has emerged mainly from technical areas of research, and through discussion of concepts from History, Political Science, Sociology, and Science and Technology Studies, show how SSH can inform its development. Finally, in this Part, Hiteva et al. (Chap. 8) undertake a more theoretical analysis and comparison of different forms of modelling—techno-economic, agent-based, and ethnographic ‘models’—which may be used in the policymaking process. They discuss both ‘myths’ that surround modelling, in addition to how different modelling approaches may be integrated together.

Building then on Hiteva et al.’s discussion of bringing disciplinary approaches together particularly for policy impact, in Part III, Chaps. 9, 10, and 11 consider the critical question of *how* understandings generated through SSH can be effectively brought to the policy table, and thus inform strategic planning. The very act of policymaking is a social process that SSH scholars have much interest in; energy-SSH does not merely concern itself with energy consumers, or ‘end-users’. Genus et al. (Chap. 9) very directly confront the question of exactly how SSH integration is seen (or imagined) to have value in energy policy contexts currently, which then feeds into the shaping of funding calls. Turnheim et al. (Chap. 10) argue that Europe is now in an acceleration phase of renewables deployment, which raises fundamentally different questions both analytically and at a policy level than during earlier stages. (Energy-)SSH systems literature provides direct insights here both in identifying critical questions that need answering during this acceleration and in incorporating these into policy and practice. The final piece in this collection, Bridge et al. (Chap. 11), ends with a clear outline of the interdisciplinary field of political ecology, highlighting how its well-developed reflexive approaches can constructively challenge how policymaking is and should be done, in particular considering the role of social power in this process.

Taken as a whole, this book offers a window into the on-the-ground working of SSH in energy, and our two Afterword authors (Wilhite; Campos)

extend this collection by offering their reflections on emergent themes, how the collection sits within the wider SSH literature, and what the work means for future energy-SSH projects and involvement at a European level. As editors, and through our experience of leading the SHAPE ENERGY Platform, we see real appetite to bring SSH better into the energy policy conversation. Notwithstanding the challenges that remain in implementing this, this book provides examples of how this is being and could be done.

NOTES

1. The comprehensive integrated climate and energy policy was adopted on 24 October 2014, as part of which there was a clear commitment to delivering the EU's 2030 targets (as detailed in the main text of this chapter). The subsequent 'Governance of the Energy Union' policy documentation ('COM(2016) 0759') was formally approved by the European Parliament on 30 November 2016; its purpose is to establish a framework to ensure those targets are achieved.
2. The 'Clean Energy Package for All Europeans' policy documentation ('COM(2016) 860') was formally approved by the European Parliament on 30 November 2016. Its purpose is to ensure that the EU remains competitive in the global energy market, mainly in response to anticipated changes associated with the clean energy transition. The Package includes eight different sets of legislative changes.
3. The Strategic Energy Technology Plan (SET-Plan) was adopted by the Commission on 22 November 2007. Its core purpose is to drive the development and diffusion of low-carbon/efficient energy technologies via strategically guiding the spending of research, development, and demonstration projects (primarily through its Horizon 2020 Framework Programme).
4. An epistemic community is 'a network of professionals with recognised expertise and competence in a particular domain and an authoritative claim to policy relevant knowledge within that domain or issue-area' (Haas 1992, p. 3).
5. EU Horizon 2020 LCE-31-2016-2017 funding calls, under the topic of 'Social Sciences and Humanities Support for the Energy Union'. Equivalent calls have also been released in the more recent energy Work Programme, specifically: EU Horizon 2020 LC-SC3-CC-1-2018-2019-2020, under the topic of 'Social Sciences and Humanities (SSH) aspects of the Clean-Energy Transition'.
6. Further details of the ENERGISE ('European network for research, good practice and innovation for sustainable energy') project are available at: www.energise-project.eu. A team from the ENERGISE consortium authored Chap. 9 of this book.

7. Further details of the PROSEU ('Prosumers for the Energy Union: mainstreaming active participation of citizens in the energy transition') project are available at: www.proseu.eu. The lead of PROSEU is the author of this book's second Afterword.
8. EU Horizon 2020 LCE-32-2016 funding call, under the topic of 'European Platform for energy-related Social Sciences and Humanities research'.
9. www.shapeenergy.eu.

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