



Provided by the author(s) and University of Galway in accordance with publisher policies. Please cite the published version when available.

| | |
|-----------------------------|--|
| Title | Imaginarities and practices: learning from ENERGISE about the integration of social sciences with the EU Energy Union |
| Author(s) | Genus, Audley; Fahy, Frances; Goggins, Gary; Iskandarova, Marfuga; Laakso, Senja |
| Publication Date | 2018-08-24 |
| Publication Information | Genus A., Fahy F., Goggins G., Iskandarova M., Laakso S. (2018) Imaginarities and Practices: Learning from 'ENERGISE' About the Integration of Social Sciences with the EU Energy Union. In: Foulds C., Robison R. (eds) Advancing Energy Policy. Palgrave Pivot, Cham |
| Publisher | Palgrave Macmillan |
| Link to publisher's version | https://doi.org/10.1007/978-3-319-99097-2_9 |
| Item record | http://hdl.handle.net/10379/10052 |
| DOI | http://dx.doi.org/10.1007/978-3-319-99097-2_9 |

Downloaded 2024-04-24T04:40:43Z

Some rights reserved. For more information, please see the item record link above.



Chapter 9. Imaginaries and Practices: Learning from ‘ENERGISE’ about the Integration of Social Science with the EU Energy Union

Audley Genus^{*1}, Frances Fahy², Gary Goggins², Marfuga Iskandarova¹, Senja Laakso³

Corresponding author: a.genus@kingston.ac.uk

¹ Small Business Research Centre, Kingston University, UK.

² School of Geography and Archaeology and Ryan Institute, National University of Ireland Galway, Ireland.

³ Consumer Society Research Centre, University of Helsinki, Finland.

Abstract

This chapter aims to: 1) identify problematic framings relating to the integration of Social Sciences and Humanities research (SSH) with the developing EU Energy Union; and 2) to account for the practice of SSH-related energy policy integration with regard to the disciplines, actors, initiatives and processes involved. It articulates an imaginary of SSH and policy integration prevalent in Horizon 2020 funding calls relating to the EU Energy Union, which prefigures what is asked of SSH. Implications of this imaginary for the framing, substance and process of energy policymaking and the role of SSH research therein are discussed. An alternative imaginary is depicted, based on reflection on ‘ENERGISE’ (European Network for Research, Good Practice and Innovation for Sustainable Energy), a three-year, pan-European Horizon 2020-funded project being undertaken by the authors. The conclusion identifies priorities which need to be addressed in future Horizon 2020-funded research, centring on further probing of alternative imaginaries of, and approaches to, eliciting energy policy integration of SSH.

Keywords

ENERGISE project; Energy research; Horizon 2020; Imaginaries; Policy integration; Social sciences.

9.1. Introduction

The European Commission is concerned to realise the potential contribution of Social Sciences and Humanities (SSH) to the achievement of objectives across a range of societal challenges, for example by establishing the integration of SSH as a cross-cutting theme across funding programmes such as Horizon 2020. However, within EU energy research and policymaking, SSH remain to be effectively integrated (Foulds and Christensen, 2016). SSH has suffered in comparison with STEM disciplines in energy research funding and perception of policy relevance.

In the academic literature it has been noted that social ‘dimensions’ of energy are frequently neglected whilst there is greater emphasis on material and technical questions, something Sovacool et al. (2015) refer to as ‘disciplinary chauvinism’. Moreover, SSH research is eclectic, including that which could inform energy research and policy at EU and national levels. The SHAPE ENERGY platform lists 20 SSH disciplines, including both Business and Theology. Undervaluing this variety may lead to neglect of core aspects of the climate change/energy challenge, such as moral questions about human needs, or over-emphasis of technical, material and narrowly behavioural aspects (Castree, 2016; Shove, 2014).

The lack of integration highlighted above is due partly to the nature of imaginaries of energy-SSH adopted by policymakers and funders. The chapter argues that the primary reason for this shortcoming concerns the ‘imaginary’ of SSH energy policy integration that has been institutionalised in EU funding calls and pre-figures the aims, roles and approaches to be adopted in funded projects, as well as their expected impact on policy. The article suggests that an alternative imaginary is possible and compares prevailing and ‘new’ contending, though interdependent, imaginaries.

The chapter is organised as follows. Section 9.2 discusses what is meant by ‘imaginaries’ and ‘integration’ in relation to SSH research. Section 9.3 identifies the imaginary of SSH-energy policy integration manifest in selected Horizon 2020 work programmes. Section 9.4 considers the imaginaries of SSH integration implicated with proposing and executing the ENERGISE (European Network for Research, Good Practice and Innovation for Sustainable Energy) project¹, a large scale, three-year (2016-19) project funded under the European Commission Horizon 2020 framework programme. Finally, section 9.5 reflects on what may be learned from the above regarding the need for, and institutionalisation of, new imaginaries capable of enhancing the integration of ‘softer’ SSH approaches in research and policy. Such imaginaries, research and policy would recognise the importance of citizen action, and energy-related cultures and practices to the transformation of unsustainable lifestyles across the EU.

9.2. Understanding Imaginaries, Integration and SSH Research

9.2.1. ‘Imaginaries’

A growing literature has developed around ‘sociotechnical imaginaries’. Sociotechnical imaginaries are defined as ‘collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable

through, and supportive of, advances in science and technology' (Jasanoff, 2015, p.4). '[T]hey reside in the reservoir of norms and discourses, metaphors and cultural meanings out of which actors build their policy preferences' (Jasanoff and Kim, 2009, p.123) [and] 'project visions of what is good and worth attaining' (Sovacool and Hess, 2017, p.719).

Jasanoff and Kim (2009) refer to six dimensions that may be employed in the analysis of sociotechnical imaginaries and are adapted to inform the work of this chapter. The dimensions are: 1) framing of societal challenges and opportunities which SSH energy research might address; 2) policy focus – e.g. as present in the text of calls for funding; 3) controversies – over what do they arise; 4) stakes – what could be won or lost in resolving controversies; 5) closures – how the issues at stake are or will be resolved; and 6) civic epistemologies – e.g. the prominence and legitimacy of quantitative and qualitative research methods and processes governing relations among state authorities, experts and civil society.

Methodologically, sociotechnical imaginaries approaches are well suited to critical investigation of the meanings attached to, institutionalisation of, and change in EU research funding priorities and policies. Drawing on the analytical framework presented above, this chapter represents a novel application of the sociotechnical imaginaries approach to the analysis of EU energy and research funding policies and integration of SSH research.

9.2.2. 'Integration'

In energy-related research, SSH integration with policy is often addressed as part of wider debates about energy transitions, socio-technical systems design, and the role of SSH in interdisciplinary research (Rochlin, 2014; Cooper, 2017; Castree and Waitt, 2017; Stern, 2017). There may be differences between qualitative SSH researchers and policymakers regarding what qualitative SSH can realistically achieve and over what timescales (Rochlin, 2014; Castree and Waitt, 2017). For example, the current conceptualisation of the idea of 'policy impact' reflects a rather narrow understanding of the role and integration of SSH research, one which is oriented towards specific societal problems defined in instrumental terms set by policymakers, rather than collectively determined through inclusive deliberation among a range of stakeholders. This approach often leads to qualitative SSH being treated as secondary to natural science, but also to the 'harder', more 'scientific' of the SSH disciplines such as Economics. This approach may also neglect the wider impact that SSH has in influencing policy agenda and governance (for politics rather than policy) (Castree and Waitt, 2017).

A broader notion of integration implies inclusion of different disciplinary perspectives in research policy and funding (e.g. Horizon 2020). Here, integration of SSH is commonly viewed as integration with STEM in interdisciplinary programmes and projects, which poses certain challenges as hierarchies and asymmetries still persist (Pedersen, 2016). Pedersen (2016) illustrates this point with a critical analysis of the Horizon 2020 programme, suggesting that the political rhetoric of interdisciplinarity is driven by user needs and political incentives rather than bottom-up research interests. Furthermore, interdisciplinarity is not a magic bullet solution (Fox et al., 2017); even between SSH disciplines insurmountable disagreement often exists. Hence, such integration of SSH approaches may be impracticable and/or ineffective.

The argument here is for an imaginary in which EU energy policy integrates qualitative SSH which recognises the collective nature of social practice and its implication for building energy policies and governance on a renewed understanding of energy demand and how it may be reduced. There is some way to go before such an imaginary may be said to predominate, as the next section on EU work programmes and funding calls will verify.

9.3. Imaginaries and SSH Integration: Analysing EU Energy Research Funding Calls

Energy-SSH disciplines have been under-utilised by policymakers, in the European context and beyond, in spite of their considerable potential.

9.3.1. Integration of SSH: the Text of Three Horizon 2020 Work Programmes

In the text of the 2014-15 Horizon 2020 work programme for Secure, Clean and Efficient Energy (hereafter 'SC3')ⁱⁱ, 'social sciences' is mentioned once. This is in connection with a specific challenge requiring socioeconomic research on energy efficiency (EE 12 – 2014), wherein (on p.25) energy efficiency is stated to be: 'playing a growing role in local, national and European policy development. It is a complex issue spanning different disciplines including engineering and social sciences.'

In addition, there is a reference to the need for applicants to 'take gender issues into account as well as existing macroeconomic and microeconomic models and results of socio-economic sciences and humanities' (again in EE 12 – 2014: socioeconomic research on energy efficiency, on p.25), with 'a specific priority [being] given to the development of micro-economic analysis of the latest energy efficiency measures.'

Note in the above the slippage in language across the few mentions of 'social sciences', 'socio-economic sciences' and 'humanities'. Later work programmes more consistently refer to 'SSH', possibly eliding differences between at least 20 different disciplines and arguably employing a formulation which tags humanities on to social sciences.

In 2016-17, SSH became more prominent. There were two references to SSH in headings in the Competitive, and Low Carbon Energy call within the SC3 work programmeⁱⁱⁱ, and a stronger and more frequent appeal to SSH both in the introductory 'blurb' of the programme and in the subsequent text. For example, (on p.10) it is considered that: 'New approaches will therefore have to be stimulated as regards business models, competitive services, and an increasingly smart and dynamic system utilizing, wherever possible, a multidisciplinary approach, integrating different Social Sciences and Humanities fields.'

Reference is also made (on p.106) to the need for 'solid involvement of Social Sciences and Humanities and local communities and civil society to understand best practices and to increase knowledge'. Further, it is recognised (p.126, in relation to a European Platform for energy SSH)^{iv} that 'researchers in the Social Sciences and Humanities (SSH) have a particular expertise in analysing and understanding deep change and in designing innovation processes, including social innovations' and that 'they *must* [our italics] play a stronger role in addressing energy-related challenges. Accordingly, SSH aspects *must* be better integrated into all stages of the research process.' However, other

references to SSH continue to exemplify weaker integration of SSH, in ways which do not depart significantly from the 2014-15 work programme.

In the text of the 2018-2020 SC3 work programme^v, there is a continuation of the stronger version of SSH integration discussed above. Indeed, there is a prescriptive tone used throughout the text in relation to SSH. In a number of cases it is stated that funded projects ‘will use’ or make ‘paramount’ use of techniques and methods of SSH to identify relevant stakeholders and analyse needs and increase awareness, and assess impact on society.^{vi} At the same time, there are appeals to ‘balance’, ‘i.e. [p]roposals will combine the relevant scientific and technological elements of these fields with relevant Social Sciences and Humanities’.^{vii} There remains a sense of SSH being necessary yet subordinate to science and engineering, however, as in previous work programmes. For example, the text outlining LC-SC3-RES-28-2018-2019-2020: Market Uptake support states that the: ‘complexity of [the] challenges...calls for multidisciplinary research designs, which should include contributions *also* from the social sciences and humanities’ (p.71-72, our italics).

9.3.2. Imaginary of SSH in Horizon 2020 SC3

This section discusses the imaginary of SSH in SC3 work programmes, categorised on the basis of the six dimensions of sociotechnical imaginaries by Jasanoff and Kim (2009): framing of risks and opportunities, policy focus, controversies, stakes, closures, and civic epistemologies. Although there is now a greater appreciation of the contribution of SSH disciplines and approaches, overall there remains a tendency to frame EU energy challenges and research as primarily technical in character. Further, the contribution of SSH is typically framed in relation to risks concerning the need for social acceptability or resistance to change.

The dominant policy focus is the growing role of energy efficiency in EU policy development, and market uptake of renewable energy technologies. These are posed in the context of controversies or challenges relating to ensuring behavioural change and improved consumer choices, e.g. achieved through the implementation of ‘ICT-based solutions’ in a problem-solving model (p.28, Horizon 2020 2016-17 SC3 work programme, call EE-07-2016-2017: Behavioural change toward energy efficiency through ICT).

At stake are the achievement of EU climate change targets, the competitiveness of the EU within the global renewable energy sector, and, increasingly, how to ensure the buy-in of citizens/consumers across the EU within processes of responsible innovation, which has become a working principle underpinning EU research and innovation. Closures are framed in terms of contributions that funded research can make to EU or national energy policy development, predicated either on changing practice cultures in a participatory manner or nudging individual consumers to make ‘better’ choices.

Finally, in relation to civic epistemologies, there is an emphasis on the production of knowledge capable of shedding light on factors enabling individual consumers or households to make better energy choices. Such knowledge may involve or require the particular expertise of social scientists, working with local communities.

9.4. Imaginaries and Integration: the case of ENERGISE

9.4.1. Introducing ENERGISE

ENERGISE is a three-year research project funded by the European Commission under the Horizon 2020 programme within the SC3 societal challenge, which aspires to strengthen the integration of SSH with the emerging EU Energy Union. ENERGISE aims to achieve a greater understanding of the social and cultural influences on residential energy use in Europe, and to develop and test novel bottom-up approaches for reducing household energy demand across different contexts (see: www.energise-project.eu).

While the project is interdisciplinary in nature, incorporating various academic approaches that focus on a common goal, it is also transdisciplinary, insofar as it incorporates non-academic and experiential knowledge in the research process (Holbrook, 2013). The project incorporates perspectives from various stakeholders including businesses, NGOs, policymakers, government agencies, and community groups, all of which are represented on the project's advisory panel. Project partners have also liaised with numerous local and national groups, from national energy agencies to local authorities and interest groups, contributing to the co-creation of knowledge. The inclusion of diverse perspectives increases the likelihood that the project outputs will be applicable and relevant for a wider audience and in various contexts, and facilitates the exchange of knowledge between scientists, policymakers, practitioners and civil society. Meeting the needs of different audiences that may have very different requirements, as well as competing perspectives, presents a number of challenges. For example, it requires the production of a range of tailored outputs (Rau et al., 2018). Open communication and feedback between project partners and regular two-way engagement with external stakeholders is considered key to overcoming these challenges.

The project adopts an experimental Living Lab approach, which aims to generate knowledge in a 'real-world' setting that addresses the complex problem of excess energy use (Heiskanen et al., 2018). The nature of this kind of research setting is open-ended and allows for some degree of creative flexibility regarding design/implementation by not having at the outset a particular defined template for ENERGISE Living Labs, or a fixed image of what 'community' or co-creation entail. While this also requires intense coordination and debate among the project partners, the flexibility enables the production of a contextually and culturally-sensitive ELL design which could stand a better chance of being more successfully implemented, and hence make a greater contribution to broader sustainability transformation.

9.4.2. Comparing imaginaries of SSH

Table 9.1. summarises and compares imaginaries between the ENERGISE project proposal and the 2014-15 Horizon 2020 SC3 work programme. The comparison is elaborated in the following paragraphs.

Framing of societal challenges/risks and opportunities: The ENERGISE project is broadly framed as a response to perceived failures of technological approaches to address the problem of excessive residential energy use and related CO₂ emissions: despite increases in energy efficiency, the total energy use in households continues to grow. The main societal challenge in ENERGISE is the need for

a sustainable and responsible energy transition, rather than social acceptability of energy efficient technologies.

Policy focus: ENERGISe aims at improving decision-making and providing recommendations for national and EU-level policy that derive from better understanding of socially shared practices rather than a concern to ‘nudge’ choices and diffuse low carbon or renewable energy technologies. Policy integration in the project is present both at the local level by collaboration with and empowerment of local actors in ELLs and co-creation of contextually relevant knowledge, as well as nationally and cross-nationally via the sharing of knowledge of practice cultures and cross-culturally good practices for researching and transforming energy use. SSH research provides means to investigate and analyse individual/collective level differences, effectiveness of Living Lab approaches, as well as energy-related practices.

Table 9.1. Comparing imaginaries: ENERGISe project proposal and H2020 SC3 (2014-15).

| | ENERGISe proposal | Horizon 2020 SC3 2014-15 |
|-----------------------------|---|--|
| Framing risks | Technological failure; need to understand energy-related practice cultures | Technical challenges; need for social acceptability |
| Policy focus | Changes in energy practice cultures; participatory governance | Energy efficiency; increase uptake of renewable energy technologies |
| Controversies | Competing understandings of (how to change) energy-related practice cultures | Top-down approach to ensuring behaviour change; consumer choice |
| Stakes | Realising the energy transition through responsible governance | Competitiveness; buy-in of customers |
| Closures | EU and national policies and interventions predicated on changing practice cultures | Technical energy efficiency innovations; policy measures to ‘nudge’ individual choices |
| Civic epistemologies | Understanding energy practice cultures through co-creation of knowledge | Enabling consumers to make ‘better’ energy choices |

Source: authors’ own application of the framework proposed by Jasanoff and Kim, 2009.

Controversies recognised in the project proposal arise over bottom-up and prevalent top-down approaches to energy demand reduction. The first controversy is related to the localised and contextualised aspects of energy use and diverse practice cultures and need to focus on them on one hand, and the need for comparable outcomes across Europe on the other. The second controversy considers the focus on co-inquiry (Genus, 2014) and co-creation processes (and multi-way engagement) with local stakeholders versus (inter)national energy governance. Understanding social norms related to energy use requires in-depth and qualitative approaches. Shifting these collective norms cannot be done within one research project, but attention needs to be paid on ways to upscale the research findings.

Stakes: In contrast to a concern about consumer buy-in and EU competitiveness, the imaginary epitomised by ENERGISE contributes to co-creation of knowledge about energy demand reduction and sufficiency of energy use. It engages with issues of democratisation and empowerment in a responsible approach to energy governance. At the same time, the novelty of the approach, ambitious goals and cross-national comparisons might lead to the need for simplifications and compromises in the research process.

Closures: The ENERGISE project emphasises that it goes beyond what is typically asked for in Horizon 2020 energy work programmes, predicated upon the quest for greater energy efficiency, economic analyses and technical innovation. Based on developing knowledge of energy-related practice cultures, ENERGISE hopes to influence the setting of future policy agendas for social inquiry and shape future research, as well as to contribute to improved decision-making at different policy levels and the development of Energy Union.

Civic epistemologies: ENERGISE aims to improve the qualitative understanding of different energy-related practice cultures, as well as the differences between individual and collective behaviour and data informing knowledge of factors influencing differences between these foci. Qualitative methods and the Living Lab approach are used to, for example, reveal underlying dynamics such as qualitative changes in energy demand, or shifts in daily routines due to ruptures and change initiatives. The cross-disciplinary and co-creative approach to working with the knowledge of energy citizens allows for going beyond conventional, state-of-the-art research and policy with its emphasis on providing consumers with better information on which to base decisions.

9.5. Conclusion: towards a new imaginary of SSH energy research

The chapter was written out of a concern that qualitative SSH was not being sufficiently or effectively integrated into EU energy research and policy. The chapter argues that this shortcoming is connected with the playing out of a certain imaginary of energy research and its integration with policy. Such an imaginary infuses programmatic calls for funding under Horizon 2020. These are also to be seen in the writing of Horizon 2020 project proposals such as that for ENERGISE. However, both the proposed and implemented design of a project such as ENERGISE demonstrate the potential of a new imaginary for the integration of ‘softer’ SSH with energy research and policy in and within the EU. Hence ‘new’ and prevailing institutionalised imaginaries are at the same time interdependent and compete with each other. Thus, as proposed, ENERGISE reproduces the established imaginary – in attempting to gain high scores from project proposal evaluators for relevance to the aims of a funding call – even as its researchers propose a contending view. This tension continues into the conduct of the project, which still needs to satisfy programme aims while making the case for a new imaginary.

In terms of learning from ENERGISE about the nature of future European framework programme energy work programmes and funding calls which may require SSH research, it is important to note that this chapter is not advocating that the ENERGISE project should serve as a template for others. Fundamentally, the trajectory of any research project is contingent upon a range of project-internal and external factors (Rau et al., 2018). While other studies have called for Horizon 2020 programmes more generally to embrace SSH (e.g. Bitterberg, 2014), the case of ENERGISE serves to highlight

some core issues specifically regarding the effective integration of qualitative SSH energy research with the developing EU Energy Union.

The ENERGISE proposal was developed in response to a Horizon 2020 SC3 funding call which was premised on a problem-solving model, at the centre of which lay concerns about how to effect behaviour change on the part of energy users and how to promote innovation of renewable energy or energy efficiency technologies. Such an imaginary may well be imbued with strategic intent, in which SSH can contribute by shedding light on behavioural aspects of energy or energy technologies, for example in relation to economic inducements or interventions required to galvanise greener consumer preferences. However, it has not been as successful as hoped at addressing the need to understand in greater depth the antecedent conditions of consumption, which may be implicated with energy-related practice cultures. To the extent that this is so, EU SSH energy research funding has been calling upon a limited part of the repertoire of SSH, which if better and more fully utilised could enhance EU energy policy making. In the forthcoming European Commission Horizon Europe (ninth) framework programme, which will be launched in January 2021, this could be addressed by adapting the language of energy work programmes and funding calls in favour of under-represented aspects of SSH. This could be achieved by prioritising more fulsome interdisciplinarity or transdisciplinarity, flexibility in research design, and co-creation of knowledge in experimental sites (such as living labs), capable of revealing, understanding and transforming diverse energy-related practice cultures.

Acknowledgments

In preparing this chapter, the authors have drawn heavily on work conducted for the European Network for Research, Good Practice and Innovation for Sustainable Energy (ENERGISE) project, which receives funding from the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement No 727642.

References

- Bitterberg, C., 2014. Report on the Integration of Socio-economic Sciences and Humanities (SSH) in Horizon 2020 Deliverable 3.3 of the net4society project funded under the *European Union's Horizon 2020 research and innovation programme* GA No: 320325. Available at: <http://www.net4society.eu/>
- Castoriadis, C., 1987. *The Imaginary Institution of Society*. Cambridge, MA: MIT Press.
- Castree, N., 2016. Broaden research on the human dimensions of climate change. *Nature Climate Change*, 6, pp.731.
- Castree, N. and Waitt, G., 2017. What kind of socio-technical research for what sort of influence on energy policy? *Energy Research & Social Science*, 26, pp.87-90.
- Cooper, A.C.G., 2017. Building physics into the social: enhancing the policy impact of energy studies and energy social science research. *Energy Research & Social Science*, 26, pp.80-86.
- Foulds, C. and Christensen, T.H., 2016. Funding pathways to a low-carbon transition. *Nature Energy* 1(7), pp.1-4.

Fox, E., Foulds, C. and Robison, R., 2017. *Energy & the active consumer - a social sciences and humanities cross-cutting theme report*. Cambridge: SHAPE ENERGY.

Genus, A., 2014. 'Coinquiry' for environmental sustainability: a review of the UK Beacons for Public Engagement. *Environment and Planning C: Government and Policy*, 32, pp.491-508.

Heiskanen, E., Laakso, S., Matschoss, K., Backhaus, J., Goggins, G. and Vadovics, E., 2018. Designing real-world laboratories for the reduction of residential energy use: articulating theories of change. *GAIA*, 27, pp.S1-60.

Holbrook, J.B., 2013. What is interdisciplinary communication? Reflections on the very idea of disciplinary integration. *Synthese*, 190, pp.1865-1879.

Jasanoff, S., 2015. Future imperfect: science, technology, and the imaginations of modernity. In: Jasanoff, S. and Kim, S-H. (eds.) *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*. Chicago, IL: University of Chicago Press, pp.1-33.

Jasanoff, S. and Kim, S-H., 2009. Containing the atom: sociotechnical imaginaries and nuclear power in the United States and South Korea. *Minerva*, 47, pp.119-146.

Pedersen, D.B., 2016. Integrating social sciences and humanities in interdisciplinary research. *Palgrave Communications*, 2, 16036.

Rau, H., Goggins, G. and Fahy, F., 2018. From invisibility to impact: recognising the scientific and societal relevance of interdisciplinary sustainability research. *Research Policy*, 47(1), pp.266-276.

Rochlin, G.I., 2014. Energy research and the contributions of the social sciences: a retrospective examination. *Energy Research & Social Science*, 3, pp.178-185.

Shove, E., 2014. Putting practice into policy: reconfiguring questions of consumption and climate change. *Contemporary Social Science*, 9(4), pp.415-429.

Sovacool, B.K. and Hess, D.J., 2017. Ordering theories: typologies and conceptual frameworks for sociotechnical change. *Social Studies of Science*, 47(5), pp.703-750.

Sovacool, B.K., Ryan, S.E., Stern, P.C., Janda, K., Rochlin, G., Spreng, D., Pasqualetti, M.J., Wilhite, H. and Lutzenhiser, L., 2015. Integrating social science in energy research. *Energy Research & Social Science*, 6, pp.95-99.

Stern, P.C., 2017. How can social science research become more influential in energy transitions?. *Energy Research & Social Science*, 26, pp.91-95.

ⁱ The five co-authors of the chapter are active researchers on the ENERGISE project, with backgrounds in different SSH disciplines: Innovation, Human Geography, Science and Technology Studies, Sociology and Environmental Studies See www.energise-project.eu for more details.

ⁱⁱ https://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/main/h2020-wp1415-energy_en.pdf

ⁱⁱⁱ http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-intro_en.pdf

^{iv} See Call text for LCE-32-2016: European Platform for energy-related Social Sciences and Humanities research

^v http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-energy_en.pdf

^{vi} See Call text for LC-SC3-NZE-3-2018: Strategic planning for CCUS development

^{vii} See Call text for LC-SC3-CC-5-2018: Research, innovation and educational capacities for energy transition