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Use of evidence in energy policy:

the roles, capacities and expectations of Social Sciences and Humanities

Scoping workshop report

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September 2019

Energy -SHIFTS

ENERGY SOCIAL SCIENCES & HUMANITIES INNOVATION FORUM TARGETING THE SET-PLAN

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Executive summary

This report presents findings from a scoping workshop on how evidence is used in energy policy, focusing especially on the roles, capacities and expectations of Social Sciences and Humanities (SSH). The workshop was organised as part of the scoping phase of the Energy-SHIFTS project (Energy Social Sciences and Humanities Innovation Forum Targeting the SET Plan) in June 2019.

This report begins by outlining the workshop aims within the context of the Energy-SHIFTS project, before presenting a brief context-setting review of relevant literature and debates on SSH evidence and its role in energy policy-making. This review examines different disciplines' representation in energy research and policy – especially in the context of EU research/innovation funding policies – finding that Social Sciences, and (to an even greater extent) Humanities, are relatively neglected compared to the dominant technical and natural sciences. Furthermore, these SSH disciplines are often relegated to a secondary, 'add-on' or late-stage role when used within projects. These tendencies have implications for energy policy, notably a reliance on over-simplistic models of social phenomena. The literature provides compelling arguments on what the contribution of energy-SSH could and should be: both in supplying better understandings of such phenomena (supporting more effective policy-making) and crucially, in challenging dominant assumptions and agendas, and engaging with normative questions, thus contributing to deeper transformations in the research and policy landscape. We consider existing knowledge on practical suggestions for developing this contribution, before discussing how the ideas reviewed here shaped the design of the workshop.

The aim of the workshop was to bring together experts from the research and policy sectors to participate in scoping discussions on how SSH evidence is, and could be, used in energy policy (especially at the EU level), in order to inform the Energy-SHIFTS project and feed into the future development of EU-funded energy research and innovation. The workshop agenda emphasised structured but highly interactive exercises; 22 people attended, representing diverse academic disciplines and policy sector institutions (including European Commission [EC] agencies). The first exercise involved annotating and discussing a series of published documents. These seven documents exemplify different ways in which SSH evidence is currently used, sought, or engaged in energy policy(making). The session built on and developed themes from the literature review, such as the particular mechanisms through which SSH methods and evidence are systematically under-valued. The second workshop session allowed focused discussion of three different processes of research-policy engagement – Evaluations (e.g. of project outcomes); Reviews (e.g. of existing evidence); and University education, research and innovation (e.g. in terms of curriculum design). These explored themes such as the importance of meaningful and equitable dialogue between different theoretical approaches.

The final workshop session involved an expert panel debate, and focused on developing concrete proposals for researchers and policy-makers, which fed directly into the recommendations presented here. For the Energy-SHIFTS project, recommendations include exercising caution around treating SSH as a homogenous category, and the need to promote representation of the most marginalised voices. For EU research funders, we provide proposals around the meaningful (non-tokenistic) inclusion of SSH, the roles of experts, and the potential of SSH to generate 'deep innovation' in how energy is understood and governed.

Contents

1. Introduction

The energy-related Social Sciences and Humanities (energy-SSH) are increasingly advocated as a vital component of funding programmes on energy research and innovation in the European Union (EU), and more widely. Energy-SHIFTS (Energy Social Sciences and Humanities Innovation Forum Targeting the SET Plan) aims to support the role and value of energy-SSH within policy-making in Europe, particularly in terms of what policy-related research and innovation 'solutions' are funded through the EU's flagship Framework Programmes. It also aims to inform the ongoing implementation of the EU's Strategic Energy Technology (SET) Plan. The Forum is funded by EU Horizon 2020 (H2020), and runs between 1 April 2019 and 31 March 2021.

The first phase of Energy-SHIFTS involved a range of scoping activities, which included four workshops. All four workshops sought to (1) connect with interested groups and prospective collaborators; (2) hear wider perspectives on key themes that will likely reappear throughout the project; and (3) provide recommendations for the Energy-SHIFTS project and for EU Framework Programme funding. This is one of four reports produced to capture the respective findings of the scoping workshops.

The theme of this report is the **use of evidence in energy policy**, focusing especially on the roles, capacities and expectations of SSH. Evidence was selected as a workshop theme because Energy-SHIFTS is designed to catalyse the use of energy-SSH research evidence among policy audiences, and thus it is appropriate that we unpick upfront some of the assumptions about the production and use of evidence. Issues of the nature and validity of evidence permeate all debates about the role of SSH in energy policy-making, and such issues must be recognised and addressed as part of any effort to change or improve the use of SSH in policy processes. More fundamentally, it is increasingly recognised that issues of evidence production and use constitute a vital but under-researched area of study, with major implications for effective policy-making (e.g. Oliver and Boaz, 2019).

The core aim of this workshop was therefore to bring together experts from the research and policy sectors to participate in a series of scoping discussions on how SSH evidence is, and could be, used in energy policy, in order to inform the Energy-SHIFTS project and feed into the future development of EU funded energy research and innovation.

This report is structured as follows: section 2 provides a brief overview of key ideas within SSH literature that informed the aims and design of this workshop. Section 3 then gives details of the event itself, including the agenda and participants. Section 4 provides detailed discussion of the insights arising from the workshop, and is structured around the three main sessions at the event. The first of these (discussed in section 4.1) is a session reviewing key documents to understand how SSH evidence is conceptualised, valued and integrated (or not) in the current policy and research landscape. The second (in section 4.2) is a group discussion session exploring three topics in depth, namely: Evaluations; Reviews of evidence; and University-related education, research and innovation. The third (in section 4.3) is a panel debate focused on developing recommendations for various audiences. Section 4.4 then provides synthetic reflection on themes emerging throughout the workshop discussions. Finally, Section 5 summarises the key recommendations arising from this workshop for the Energy-SHIFTS project and EU research funding managers (and associated policy officers).

2. Debates in energy-related Social Sciences and Humanities (energy-SSH) research

This review provides an overview of key ideas and debates regarding the use of evidence from energy-SSH. It draws especially on the outputs of the recent project Social Sciences and Humanities for Advancing Policy in European Energy (SHAPE ENERGY), which examined the current and recent role of SSH within the landscape of EU energy policy and research. However, this review also draws on a few key sources regarding SSH evidence more generally. It first briefly reviews different disciplines' representation in energy research and policy, then considers the nature and timing of the roles played by different forms of evidence; the implications of these roles; and what the contribution of energy-SSH could and should be. The review is not intended to present an exhaustive discussion of literature, but rather to 'scope' and contextualise key themes that informed the workshop design.

2.1. Different disciplines' representation in research and policy

Foulds and Robison (2018) argue that Science, Technology, Engineering, and Mathematics (STEM) disciplines dominate energy policy discourses, as part of a prevalent narrative of technological development and subsequent transfer, while energy-related SSH disciplines are commonly overlooked. This is despite some progress in the mainstreaming and monitoring of SSH within European Commission (EC) managed research funding (across energy and other areas) during the H2020 period (2014-2020). For example, certain topics are 'flagged' as SSH topics, and the Participant Portal Online Manual (which provides instructions for H2020 applicants[1]) states that any proposal within these flagged topics that does not show a sufficient contribution or integration of SSH will receive a low evaluation score. However, this is not always reflected in funding outcomes: a recent report reviewing four years of H2020 (European Alliance for Social Sciences and Humanities, 2019, p.1) found that between 2012 and 2017, "*the situation has been rather stable: between a quarter and a third of projects funded under SSH flagged topics have* ***no SSH contribution***" (emphasis added). In total, in 2017, only 3% of the H2020 energy research programme budget was allocated to SSH partners (Kania et al., 2019).

There is also differentiation within the category of SSH, with the Humanities (e.g. History and Philosophy) receiving much less policy attention and research funding than the Social Sciences (e.g. Economics and Business Management) (Kania et al., 2019). This pattern is true not only of energy research, but also appears when we consider the wider role of SSH across the whole of H2020. For example, König (2019a) examined the composition of the expert advisory groups that guide the writing of EC funding calls and found that,

> "*...economics is much better represented in the advisory groups than the other social sciences, while humanities are barely in place at all*" (König, 2019a, p15).

It is also interesting to note that the EC's SSH integration monitoring reports combine all the Humanities disciplines, along with the Arts disciplines, as one single disciplinary category. The most recent monitoring report (Kania et al., 2019, p.39) found that in projects funded under SSH flagged topics within the energy work programme, only 1% of the experts funded were in Humanities and Arts disciplines (in practice, corresponding to the involvement of one single expert). Since the EC's flagging system currently flags funding calls that are deemed to be 'relevant' to SSH[2], this means that only one Humanities and Arts expert was funded to work on the projects that the EC regarded as most relevant to its energy policy priorities – this is markedly different to the 21 (15% of experts) who were

1 https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/ssh_en.htm

2 There are strategic discussions within the EC that its flagging procedures may change from focusing on 'SSH relevance', to instead focusing on specific 'SSH perspectives'. This is because it is increasingly acknowledged that most (or potentially even all) energy calls are relevant to SSH in some way, given that energy is a societal problem that drives/requires societal responses. As such, SSH flagging is becoming more commonplace and thus SSH flagged calls are starting to lose their distinctness.

from Economics and the 15 (11% of experts) who were from Political Science / Public Policy.

Nevertheless, while these metrics reveal some important exclusions, it is also important to note that disciplines themselves are not unitary structures (and are indeed artificial constructs within academia; see, for example, Turner (2006)). Fox et al. (2017) divide energy-SSH approaches in a more nuanced way, into 'Individualised' approaches, which focus on individual decisions/actions (for example, modelling consumers as economic agents); and 'Relational Societal' approaches, which focus on energy's evolving and interdependent relationship with society (for example, investigating social practices that generate energy demand). They argue that Relational Societal approaches are largely absent from EC energy policy documents, which privilege Individualised conceptualisations instead.

2.2. The role for different types of methods and evidence

When SSH methods and evidence are used within a project or programme, this does not always equate to meaningful integration. Sovacool et al. (2015) highlight the problem of "*disciplinary chauvinism*" (p.96) within apparently interdisciplinary energy research, in which SSH are treated as secondary or peripheral to STEM methods/evidence. Jeuken and Mourik characterise this as "*unidirectional integration*" (2019, p.16); research in which a single discipline dominates others (citing Stock and Burton, 2011) with knowledge from one discipline used in service of another.

A common theme in the energy literature is that SSH are often limited to certain narrow roles within projects, e.g. awareness-raising to change energy behaviours or promoting market uptake of new technologies (Robison et al., 2018). The same is true outside this field, with König noting "*the tendency of delegating the public relations aspects of a cooperative project to SSH partners*" (König, 2019a, p.15). This often corresponds to the placing of the SSH role within the later phases of a project:

> "*SSH is often only brought in once the respective research task has already been framed or even only added-on at the end of a project – as if it were a consultancy service to make publics love the technologies that are being developed*" (König, 2019b, p.3)

This problem is picked up in the recommendations of the SHAPE ENERGY project, which state:

> "*SSH should feature in interdisciplinary energy projects' concepts (i.e. setting the project direction), not only as a tool to generate impact (i.e. an add-on at the end)*". (Robison et al., 2018, p.2)

Momentum seems to be building exactly around this concern, with the latest EC monitoring report on SSH funding concluding that:

> "*As a general rule [for Horizon Europe], SSH integration will have to follow a more holistic approach covering the entire cycle from co-creation and co-design, to the selection and implementation of projects. The earlier SSH expertise is integrated in a project - not merely as an add-on element - but as a core element, the more impact it can create. New methodologies to assess the quality of SSH integration and what effectively makes the difference between SSH as an add-on or as a core element will be explored.*" (Kania et al., 2019, p.95)

This and other recommendations from the literature are discussed further below.

2.3. Implications of the subordinate roles of SSH

The patterns in representation and role identified above have a range of implications for the way evidence feeds into policy. Fox et al. (2017) detail many implications associated with the dominance of Individualised approaches over Relational ones, with the former offering greater conceptual simplicity, and often applying linear models of causality to energy topics such as the 'consumer'. However, such approaches may neglect issues of interdependency, complexity and "*...the dynamic and systemic interconnections of what actually constitutes society*" (Fox et al., 2017, p.9). This results in a static view, a tendency to reduce social processes to a "*catch-all*" variable of 'context' and a risk of overgeneralising findings (Fox et al., 2017, p.9). One output of the SHAPE ENERGY project is a 'Lexicon' (Foulds and Robison, 2017; Robison and Foulds, 2017) which demonstrates the multiple and divergent meanings that are encompassed by energy-related terms such as 'energy transition'; 'energy governance'; and 'smart'; these meanings are often obscured when these terms are used in a reductionist way.

The balance of these approaches also connects with the issue discussed above regarding the timing of SSH within the research process; with Fox et al. (2017) arguing that Individualised approaches may be relatively

easy to append to the end of technically-focused projects. Relational approaches, in contrast, tend to focus on framing or understanding the problem and exploring co-evolving aspects of the problem and solution, and thus demand an earlier role within project development (Fox, et al., 2017). Arguably, however, both kinds of approach are most valuable when used from the design stage onwards. The idea of timing was taken forward in the workshop design, which included specific focus on different phases within research and policy processes (including commissioning and evaluation).

The dominance of Economics (perhaps the most obviously Individualised discipline), as outlined above, is also associated with a prevalence and power of specific narratives and frames within energy research and policy. Two of these, identified by Strengers (2013) are the concepts of Resource Man (a rational utility-maximising, technologically-competent actor) and Smart Utopia (a techno-optimist vision of future energy systems). Many further doctrines and dogmas of this paradigm are dissected by contributors to the book 'Energy Fables: Challenging Ideas in the Energy Sector' (Rinkinen et al., 2019), which opens by arguing that;

> "*Energy research and energy-related policy-making are informed by terms, ideas and stories that reproduce certain ways of thinking about problems and responses…submerged within familiar discourses in government, as well as in research and teaching*" (p.1).

Chapters go on to critique established concepts such as energy efficiency (Shove, 2019), the rebound effect (Marsden, 2019) and what is or is not an energy policy (Royston and Selby, 2019). The book argues that these constructs of a techno-economic or Individualised paradigm have considerable power in framing problems, and defining legitimate interventions, within energy policy debates. This matters because it means that the exclusion of (Relational) SSH from policy-making processes has direct influence on energy policy outcomes. Furthermore, the dominance of this paradigm within research agendas (and funding programmes) has a longer term effect on what types of knowledge can (and cannot) influence future policy, leading to an 'echo chamber' effect in which a single narrow set of 'problems' and 'solutions' is reinforced and reproduced. This is precisely the challenge that the scoping workshop (and the wider Energy-SHIFTS project) aims to address.

2.4. Research agendas as political

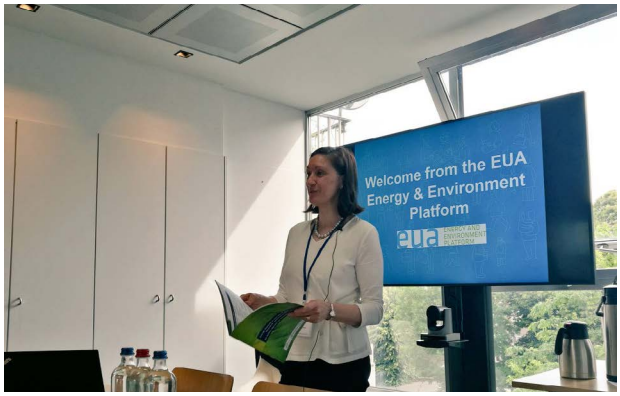
This point about the recursive or mutually-constructive relationship of agendas in research and policy also speaks to a wider idea within the literature about the underlying reasons for the patterns of dominance and exclusion outlined above. Fox et al. argue that, in the context of energy research:

> "*Individualised approaches may be favoured politically because their concentration on decision-making shares affinities with, and reaffirms, dominant neoliberal ideologies that locate citizens as consumers and reduce change to a matter of market choice.*" (Fox et al., p.10)

Even more fundamentally, König (2019a) links the neglect of SSH (in general) to the fact that an innovation narrative is dominant in European research funding; in other words, research is understood as a route to innovation, which is itself narrowly defined as a means of economic growth:

> "*One consequence is that "innovation" is usually thought of in a narrow sense: everything that leads to commodification, marketization of products. Such expectations are also somewhat predetermining the type of research that is to be supported in the first place.*" (König, 2019a, p.6)

Essentially, 'innovation' is used as a shorthand for 'technological innovation'; it is so normal for innovation to be understood as technological that this continues largely unquestioned. However, König (2019a) observes that there has been some (reluctant) progress in broadening understandings of innovation within European policy. Parts of the EU (and EC's) emerging research and policy agendas do put societal considerations more centrally – such as its efforts to better account for the possibilities of 'Social Innovation' (EC Bureau of European Policy Advisers, 2010; EC Directorate-General Regional and Urban Policy and Directorate-General Employment, Social affairs and Inclusion, 2013). Arguably, though such efforts remain relatively disconnected from the prevailing narrative of technological innovation.



2.5. The potential contribution of SSH

Notwithstanding these challenges, the literature provides many and varied arguments for how SSH methods and evidence could and should play a greater role in energy research and policy. For example, König proposes that (across fields) SSH can offer "*a vital contribution to correctly understanding the problem at hand, and for implementing the resulting solution appropriately*" (König, 2019b, p.3-4) including through:

- "*The expertise to calibrate missions*[3]*, highlighting priority aspects to focus on "what matters"*
- *The capacities of translating between academic disciplines, policy-makers and different publics*
- *The expertise in placing specific problems in broader contexts, integrating both local and global perspectives*
- *The long-standing tradition of methodological reflexivity, recognising social and cultural influences on research itself*" (König, 2019b, p.3).

Meanwhile, specifically in the energy field, stakeholders involved in SHAPE ENERGY activities highlighted a wide variety of potential areas for SSH contributions, including:

> "*vision-building, inclusion/ exclusion, collaborations, power relations, responsibility, citizenship, policy(making), governance, planning and legal frameworks, employment, poverty, stakeholder dialogue, institutional rise and fall, politicisation of research, production of evidence, societal risks, public participation, negative societal impacts.*" (SHAPE ENERGY, 2018)

The project also argues that SSH are particularly powerful in considering the different ontologies (ways of viewing the world) and epistemologies (ways of viewing knowledge) that different disciplines bring, and proposes that technical energy projects that include meaningful consideration of SSH issues benefit from increasing the robustness, relevance and real-world impact of their findings. The project found that funders are increasingly aware of the risks of not including SSH perspectives, including the risk that problems arise when implementing technological energy solutions in practice (Robison et al., 2018).

2.6. Implementing meaningful roles for SSH

As is apparent from the preceding discussions, several of the sources reviewed here included practical recommendations for addressing the problems they perceive in the use of SSH evidence and for accessing its potential contributions. Across all fields, König (2019b) provides a set of guidelines for use of SSH. One issue he raises is that simply counting the number of research topics that are 'flagged' for SSH integration within EC managed funding does not necessarily reflect the actual quantity, or quality[4], of SSH activity within the funded projects. He also presents a range of practical tips for different stakeholders in "*Stimulating and enabling cooperation when designing a research funding programme*" and in "*Fostering cooperation while implementing a research funding programme*" (König, 2019b, p.3-4).

The European Alliance for Social Sciences and Humanities (2019, p.4) make a similar series of recommendations for the Horizon Europe programme, including:

- A well-resourced focus on societies, democracy, culture and social transformation as a distinct area of research;
- A redefinition of the concept of integration through the co-design (with SSH scholars) of call topic areas to ensure a relevant socio-economic, historical and legal framework;

3 Within the forthcoming Horizon Europe funding programme, the term 'missions' refers to a set of high-profile initiatives seeking solutions to major global challenges, which are designed to have ambitious, measurable and time-bound goals. [Footnote added to original text.]

4 Relatedly, it is interesting to note that the EC's emerging interest in measuring the 'quality' of SSH similarly revolves around counting numbers/proportions of, for example, SSH partners, budget allocations, person-month shares and variety of disciplines (Kania et al., 2019, p.11).

- Appropriate participation of SSH experts in strategic programming committees, call and topic-drafting groups and evaluation panels;
- A revised methodology for monitoring interdisciplinary integration, and use of mid-term evaluation to adapt the programme.

In the energy field specifically, key recommendations from Fox et al. (2017) complement these, focusing on:

> "*...the importance of including SSH approaches in research on energy consumption; the need to acknowledge the relevance to energy consumption research of previously neglected Relational Societal approaches; and the need to be critical when considering interdisciplinary approaches...*" (Fox et al., 2017, p.2)

Specifically, they also note that the wording of future funding calls should be careful to avoid narrowly defining the problem – in their particular case, the issue of the 'active consumer' – and thereby encouraging researchers to propose projects with purely Individualised conceptions (Fox et al., 2017).

A range of further concrete proposals are set out in a manifesto of seven principles produced by the SHAPE ENERGY project (Robison et al., 2018). A first recommendation is simply that "*SSH must feature more explicitly in Horizon Europe's energy research and innovation funding opportunities, compared to Horizon 2020*" (p.1). As part of this, they call for measures to ensure SSH do not only play a subordinate role, such as making sure that calls 'flagged' as SSH-related calls have extremely clear guidance on where and how SSH are expected to form a significant part of the work plan. Calls should explicitly welcome proposals that have SSH integrated into the fundamental research questions. The EC should also facilitate meetings between different disciplines, and explicitly raise awareness of the value that diverse SSH disciplines bring to energy topics. Because call wording is central to the inclusion/exclusion of disciplines (Foulds and Christensen, 2016), EC monitoring could usefully include assessment of call wording by SSH experts to indicate which disciplines/areas are being privileged or neglected. Diverse SSH experts should also be actively recruited as evaluators, and within projects energy-SSH tasks should be conducted by those with relevant backgrounds and training.

Another SHAPE ENERGY recommendation states that processes for monitoring SSH integration need to include qualitative measures of success, not just numerical counts, e.g. of project numbers, partners, and budget spends (reinforcing König's (2019b) point above). For example: "*how have different types of expertise been brought together? What has the inclusion of SSH-inspired interdisciplinary aims, processes, and outputs led to? How has working with SSH enabled energy projects to affect policy?*" (Robison et al., 2018, p.2). SHAPE ENERGY also produced detailed recommendations around interdisciplinary working (e.g. Jeuken and Mourik, 2019) (not covered here due to limited scope).

2.7. Implications for workshop design

It is apparent from this review that there are an array of different assumptions on what useable (energy-SSH) 'evidence' looks like, and ultimately how research and policy should connect. In particular, energy policy has been dominated by evidence sourced from STEM and economic disciplines. The scoping workshop therefore aimed to put the spotlight on the evidence-related positionings of different communities involved in working with energy policies, and explored points of agreement and tension. This aim informed the selection of invitees, which included academics from diverse disciplines, as well as policyworkers.

More specifically, key issues arising from this review include a need to look deeper than 'surface-level' metrics of disciplinary representation in research and policy. This means recognising differentiation within the category of SSH, as well as considering how meaningful any apparent 'integration' of SSH actually is in practice, including the nature, purpose, scope and timing of the SSH contributions. This emphasis on differentiation informed the invitee list (as mentioned above), and also contributed to a decision to include dedicated sessions focusing on three different aspects or sites within the research-policy relationship (namely: Evaluations; Reviews; and University-related education, research and innovation), in order to bring out different insights that might arise from reflecting on these particular contexts.

Based on this assessment of the field, as well as the objectives of the Energy-SHIFTS project, the following indicative questions guided the design of the workshop:

- What represents 'good' or 'bad' evidence for policy creation, development, and monitoring?
- What do policyworkers regard as being 'robust' and/or 'credible' evidence, and why?
- What roles do/should the EU Framework Programmes (e.g. H2020, Horizon Europe) play in informing policy development?
- To what extent does evidence-based policy-making actually happen, and how?

- In what ways are SSH methodologies applied to evaluations (e.g. of policies; of project impacts), and with what implications?
- How is energy-SSH evidence meant to be integrated with evidence from the technical/ natural energy sciences?
- How can and should energy-SSH research feed into and out of the SET Plan?
- What roles do/should European universities play in the energy transition?
- What notions of 'responsibility' exist in generating and using evidence?

A further outcome of this review is that the term SSH is treated as a plural throughout this report (see further discussion in section 4.4). It is also worth noting that for the Energy-SHIFTS project, Economics is not considered as a priority area within our SSH work. Whilst it is true that the EC's definition of SSH includes Economics, we argue that Economics is very much part of the dominant research and innovation policy agenda that focuses on linear (energy) technology transfer: from the world of research and development, through testing and dissemination, straight into the lives of end-users. Such a framing misses out on the significant potential of wider, more critical SSH perspectives, which have very rarely (perhaps never in some cases) received significant policy attention. Therefore, for the purpose of clarity, this report will note when Economics is being included within the category of SSH, wherever this is relevant.

3. The workshop

The workshop gathered together policyworkers from the EC and associated bodies, energy-SSH researchers (including Economics), and non-governmental policyworkers – all of whom have an appetite for engaging with SSH. It was held in Brussels on the 18th June 2019, and was co-organised by Anglia Ruskin University and the European University Association (EUA). The workshop followed the ethical procedures of the Energy-SHIFTS project as set out in the project's Ethics Guidelines (Energy-SHIFTS, 2019). This section gives an overview of the agenda and participants.

3.1. Agenda

0900	**Arrival, registration and refreshments**
0930	**Welcome presentations** Energy-SHIFTS; EUA Energy and Environment Platform; EC Directorate-General for Research and Innovation
1030	**Reflecting on evidence – Part 1:** *Introduction and annotating documents*
1100	**Refreshments break**
1115	**Reflecting on evidence – Part 2:** *Paired discussions and plenary discussion*
1210	**World café activity – Part 1: Worksheets**
1240	**Lunch**
1330	**World café activity – Part 2: Group discussions** *Topics:* ▪ *Evaluating successes and failures* ▪ *Reviewing existing evidence* ▪ *University approaches in energy-related education, research and innovation for policy development*
1515	**Refreshments break**
1530	**World café rapporteurs report back in plenary**
1540	**Recommendations panel discussion: *'How should evidence from the Social Sciences and Humanities feature in the energy research and innovation funded by Horizon Europe?'*** Remarks from four expert panellists, followed by open Q&A and debate
1650	**Closing remarks and feedback**
1700	**Workshop finish**
1930	**Evening dinner**

3.2. Overview of attendees and affiliations

22 people attended, including organisers (one via video-presentation only). The group had the following characteristics:

- Gender:
  - Female: 14
  - Male: 8
- Main current affiliation:
  - University or equivalent research institute: 12
  - Non-governmental Organisation (NGO): 7
  - EC: 3

The researchers attending included three Early Stage Researchers (ESRs) who took responsibility for audio-visual recordings and interviews, as well as being active workshop participants.

- Current affiliation locations:
  - Western Europe: 16
  - Northern Europe: 5
  - Southern Europe: 1
  - Eastern Europe: 0

Participants came from 5 countries in total. This relatively concentrated geographic spread reflects our focus on policy processes at the EU level, which are largely centralised in Brussels; however this does inevitably limit the geographic inclusivity of the workshop.

Disciplinary backgrounds were diverse, and included: Politics and International Relations; Sociology; Psychology; Economics; Geography; History; Science and Technology Studies; Marketing; Gender studies; Communication studies; Pedagogy; Physics; and Chemistry, among others.

A video of selected participant reflections from the workshop was produced[5], and a blog about the event by the ESRs is available on the Energy-SHIFTS website (see Appendix 4).

Participant feedback

> *I like about the workshop, first of all, that it does focus on evidence because that is something that we often overlook. I think the kind of discussion that we had today is exactly the sort of discussion that we should have in looking forward to Horizon Europe… we have to have these sort of discussions, where we come from different disciplinary backgrounds and we look at concrete challenges before us. I thought this was very helpful today. I liked the atmosphere in the room, I thought it was a very lively group. I liked the composition of the group, the different backgrounds and places that people came from.*
>
> Gerd Schönwälder,
> EC Directorate-General for Research and Innovation (DG RTD)

> *I found this workshop extremely interesting today… I think you quite opened my eyes in terms of how we are wording the calls for our proposals, and how this in turn influences how evaluators evaluate the proposals and which proposals we finally select and in turn of course which evidence this produces which will feed into policy-making. So this will be certainly a point where I will be aware in future, along with the fact that it's important to work with expert evaluators that span across different SSH disciplines, with a focus on Humanities, which is also part, and spans important disciplines… Please continue with important projects such as Energy-SHIFTS because they have a direct advisory role to policy-makers at the European Commission and I'm sure your results will be valued.*
>
> Michaela Gigli,
> EC Innovation Networks and Executive Agency (INEA)

> *I found this workshop to be really valuable….What was great about the workshop was how it brought together people from lots of different communities, both in terms of across the social sciences and humanities, lots of different disciplines were represented, and also policy-makers and policy communities, to address this challenge of how we bring SSH evidence forward to inform energy research and policy. What came from this was a coming together where people exchanged views openly and honestly, and I think we ended up with a diverse range of recommendations which I hope will be taken forward…*
>
> Jason Chilvers,
> University of East Anglia

5 https://www.youtube.com/watch?v=goUpKJgwmIg

4. Workshop discussions

This section is split into three subsections representing the core elements of the workshop agenda: 4.1) Document review session; 4.2) World café discussions; and 4.3) Recommendations panel debate. In each case, we first outline the aims and process of the session, before highlighting the main ideas and issues raised. These are followed by a discussion of key themes that were generated throughout the day (4.4).

4.1. Document review session: Reflecting on evidence

4.1.1. Aim and process

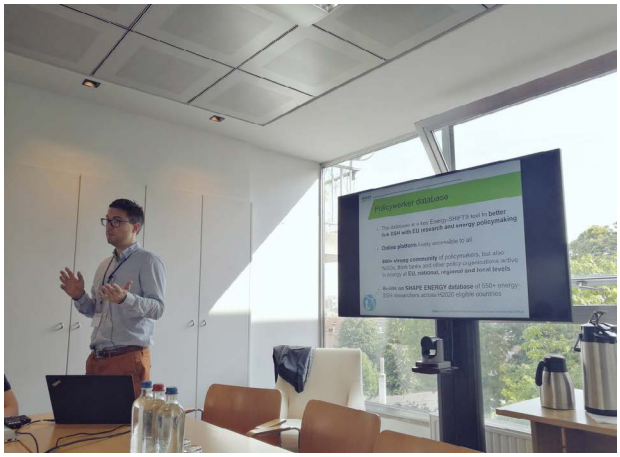
The aim of this session was to explore how SSH, and evidence more generally, are understood and presented in some examples of policy-related documents.

This session had three parts:

1. Each participant reads two documents and annotates them
2. Participants discuss their documents in pairs
3. The whole group discusses themes emerging from the exercise

Please see Appendix 1 for the participant task sheet and Appendix 2 for the list of documents. These documents had been selected to provide a range of sources relating to the use of SSH evidence in energy policy-making (covering both the supply and demand sides). Two were EC publications on the SET Plan (EC, 2015; EC Joint Research Centre, 2014); two were recent H2020 funding calls (EC, 2019[6]); one was an EC policy consultation document (EC Directorate-General for Energy, 2015); one was a UK government consultation document (Business, Energy and Industrial Strategy Committee, 2018); and one was a UK research centre's response to the latter consultation (Centre for Research into Energy Demand Solutions, 2019).

Participants were asked to think about:



- What assumptions about evidence does this document make?
- What role does this document give to SSH, and to particular SSH disciplines?
- Do you agree with the way that research aims, questions and/or methods are set out in this document; how could or should they be framed differently?

The pairings and document allocations were pre-arranged by the organisers, based on individual participants' expertise and interests. In total, there were 19 participants in the session[7], with a total of 25 documents being annotated with text. Findings presented here draw on these annotations and notes/transcripts from the plenary discussion.

4.1.2. Key themes

The limited role of SSH

Many participants noted some degree of recognition of the value of SSH in the documents; e.g. use of broad or inclusive terms to allow for various disciplines' contribution. However, they also noted a range of challenges or weaknesses in the way the documents treated SSH.

In some documents SSH were virtually invisible; for example, in the EC Directorate-General for Energy's Consultation (2015) a participant suggested that the only space for an SSH contribution was in the box labelled "*Other*" at the end of each multiple-choice question (e.g. p5, p.7). In other documents SSH received tokenistic mentions, rather than being meaningful-

6 Calls numbered LC-SC3-EE-14-2018-2019-2020, pp.43-45, and LC-SC3-CC-1-2018-2019-2020, pp.199-201.

7 Plus two organisers participating – their annotations are not included as data but used in interpretation.

ly integrated. For example, one participant pointed out that the EC (2019) call entitled "Socio-economic research conceptualising and modelling energy efficiency and energy demand" mentioned SSH as a cross-cutting priority at the end, but without clearly stating their role in the main text[8]. In the other EC (2019) call, gender-related impacts were listed as expected impacts at the end (p.201), but gender was not mentioned at all in the research questions (pp.199-201). Many documents included lists of categories of factors or impacts, such as technological, political, economic and social (e.g. EC Joint Research Centre, 2014), but some participants were doubtful as to whether each of these were really taken seriously as a (valid) different approach. Often these apparently inclusive terms were preceded and/or followed by text betraying narrowly economistic assumptions (discussed further below); for example, the Centre for Research into Energy Demand Solutions (2019) wrote about "*multiple benefits*" (p.1) and attempted to critique a market-based approach, but the benefits discussed were virtually all economic and expressed in the language of markets. One participant highlighted how a document may start with an apparently open wording, but this can be followed by concrete questions that are very specific, revealing the embedded (often contradictory) problem framing.

The documents were criticised by some as largely ahistorical, with an emphasis on innovation rather than on issues such as inertia; decommissioning; or the agency of existing infrastructure. In addition to a dearth of historical perspectives, the wider Humanities were seen as largely absent from the documents, except for a few passing mentions of culture such as, for example, "*sociocultural…issues*" (EC, 2019, p199) in a list of factors, and some rare normative questions.

A common theme was that evidence in general, including SSH, is seen as a tool to facilitate pre-existing policy aims; not as serving to shape or challenge such aims. This is exemplified by the section title "*Socio-economics in support of policymaking*" used by the EC's Joint Research Centre (2014, p.42). Related to this, SSH appeared to be placed late in the activity timelines represented by the documents; e.g. as a means to promote acceptance of a technology, rather than in the project/policy design stage. While the policy goals of organisations such as the EC will obviously guide their research agenda, participants suggested that a key contribution SSH could make is in shaping policy aims (early in the policy process) and/or challenging existing aims. The wording of call documents could allow some scope or space for such 'outside the box' contributions.

Furthermore, SSH are widely presented as a supplement or support to core economic and technical forms of knowledge; "*collateral*" in one participant's phrasing, rather than SSH contributing in their own right. For example, SSH issues are often subsumed into the term *socio-economic* (which then proves to signify, to a large extent, *economic* – see below). One annotation stated that a consultation document (EC Directorate-General for Energy, 2015) showed, "*Little awareness of SSH and its ability to conceptualise, interrogate and describe society*". Another common finding related to the use of SSH-related terms without explanation or reflection; for example: *community*, *inclusive*, *empowerment* (echoing the discussion of the SHAPE ENERGY Lexicon in the literature review). While full discussion of every term may be impossible, a systematic unreflexive use of terms relating to society suggests a particular narrow worldview and an embedded lack of attention to complexity, differentiation and contention (see further discussion on oversimplification, below).

Economistic models and their exclusions

An almost universally-identified theme related to an extremely dominant and all-pervading economistic model of energy systems. This was evidenced by terminology such as *consumers* (e.g. EC Directorate-General for Energy, 2015, p.2); *markets* (e.g. EC, 2019, pp.43-45); and *costs* (e.g. Department of Business, Energy and Industrial Strategy) that was used throughout the documents. Participants suggested that this worldview meant certain exclusions were embodied in the documents, including their statements of aims, questions and instructions.

First, it entails a narrow framing of individuals as consumers, not citizens. An extreme example is the framing of impacts (of a policy principle) as affecting "*sectors and markets*" and "*categories of economic agents*" in one EC (2019, p.43) funding call. How people are framed in a particular document is tightly linked with the disciplinary perspectives that have informed that document, and equally, will shape the way that responses from different disciplines are valued and integrated:

- *Consumers* corresponds to a framing within Economics (and to an extent Psychology)
- *Citizens* corresponds to a framing within Politics.
- *Users* corresponds to a technology-centred approach.

8 This text on cross-cutting priorities is not included in the published EC (2019) document, but is included in the online version of the Call document [https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/lc-sc3-ee-14-2018-2019-2020] (accessed 24.09.2019)

Within this consumer-centred framing, the consumer is also defined in a narrow way, with assumptions about what people want, e.g. to optimise energy use through ICT (EC, 2015). One participant similarly identified an unexamined narrative around the desirability of flexibility – echoing critiques mentioned in the literature review above, such as those of Strengers (2013) and Rinkinen et al. (2019).

Correspondingly, this economistic framing lacks a recognition or critique of issues of power; vested interests; justice; rights; access; equity; controversy; and resistance (except through narrow framings such as acceptability, perception or fuel poverty). This relates to the deeper neglect of Humanities and issues of normativity in relation to evidence and policy, as mentioned above. More fundamentally, the economistic model carries ontological assumptions around simple linear causality, conceptualising energy systems in terms of barriers (which can/must be overcome), factors, inputs and outputs, optimisation and win-wins. Such a worldview inevitably allocates only a very limited role to SSH; for example, in helping overcome 'barriers' to 'acceptability'.

Oversimplification

Participants observed that a key contribution of SSH is to reveal the complexity of energy systems, and that there is a circular relationship between an absence of SSH and an oversimplification of these systems. The documents were critiqued as ignoring the possibility of overlapping barriers, co-explanation and recursive relationships (c.f. Shove, 1998). Some neglect differentiation within groups, e.g. consumers; others focus on a single aspect of a problem while ignoring closely-related aspects, e.g. looking at renewables policy and ignoring fossil fuel policy.

Of course, some simplification is inevitable in documents such as these, but it is important to consider what is systematically excluded within this process; for example, simplification of people to economic agents only, as discussed above. Boundaries are inevitable, but such assumptions often seem to be unreflective and invisible. Furthermore, if this simplification is done necessarily in some places, there should be places that give space for complexity, and other dimensions. However, it is not clear where such space exists in energy-SSH funding.

Methods and research approaches

Participants also made observations regarding the assumptions about research approaches and methods that were embedded in the documents. Some participants raised the issue of siloing, both of SSH as a research theme (as opposed to them being integrated with other disciplines) and also of energy as a discrete topic. One participant noted that interdisciplinarity is mentioned, but not transdisciplinarity[9]. In some documents, the stated aims and questions seemed to skip over understanding issues and jump on to developing actions – relating to the point above about the potential value of SSH in understanding society.

Quantitative methods appear to be valued more highly than qualitative methods e.g. one EC (2019, p.45) call asks for "*quantified indicators and targets wherever possible*". Even where this was not explicit, it could be implicit, as in the phrase "*case studies or data*" used by the other EC (2019, p.199) call. Terms such as 'robust' are often used, without definition, but carrying connotations of statistical measures of rigour. Some participants suggested participatory methods are excluded by the framing of funding calls. Participation is sometimes mentioned, but in quite an 'extractive' way, i.e. people are used as a source of knowledge for some pre-defined purpose.

Some funding calls explicitly demand a comparative approach, narrowly defined as, for example, comparing three or more countries (EC, 2019, p.199). There is no consideration of whether the particular research questions actually require comparison of three sites, or of other possible types of comparison, such as between regions, groups or times. It is possible that comparison is perceived as a shortcut to validity, offering an illusion of representativeness or significance. (Or that this requirement is aimed at achieving other policy goals such as cross-national co-operation). SSH – and indeed any thoughtful research – would first ask what comparison offers to a study, and then consider what sites/scales/scopes of comparison should be employed.

Finally, participants discussed the idea of self-censorship, raised especially by the Centre for Research into Energy Demand Solutions' (2019) consultation response, suggesting that researchers themselves are to some extent complicit in the maintenance of the patterns of dominance and exclusion outlined above. For example, they may feel they have to use certain language in order to be 'heard' by policy-makers. An overarching theme of this session, and one which was developed throughout the day, was that 'evidence' is deeply political (as per e.g. Strassheim and Kettunen, 2014).

9 Transdisciplinarity is often seen as a more deeply integrative approach than interdisciplinarity, aiming to develop knowledge that crosses or transcends disciplinary boundaries.

4.2. World café session

4.2.1. Aims and process

This session aimed to delve more deeply into key themes identified during the workshop design process. Building on the discussion of the conceptualisation of evidence in the previous session, it facilitated detailed exploration of three specific 'sites' or processes for the production and use of evidence, and the role of energy-SSH within these; namely: i) Evaluations; ii) Reviews of existing evidence; and iii) University education, research and innovation.

Participants were asked to complete a worksheet on each of these themes (see Appendix 3). Each worksheet posed three questions. This written exercise was intended to provoke reflection as groundwork for group discussions (as well as providing data for analysis). Three thematic discussion sessions were then run in parallel, with each participant attending all three in turn (a format inspired by the World Café concept[10]). In each session a facilitator posed some prompt-style questions, but aimed to create space for open debate. Each discussion session lasted 25 minutes, with around 4-6 participants. Groupings were carefully designed to ensure a mix of researchers (including ESRs) and policyworkers in every session.

In total, 16 participants completed worksheets[11]. Not all questions were answered; a total of 88 question responses were transcribed. Findings presented here draw on these written answers and on notes/transcripts from the group discussions.

4.2.2. Evaluation

This session focused on the questions: What role do SSH play in evaluations? How can this be improved to create excellent evaluations? Participants noted that evaluations come in many forms, and that the status, scope and aims of evaluations, as well as, crucially, the roles of different actors (e.g. evaluation commissioners; independent consultants; internal evaluators; and evaluatees) will affect the way SSH are used. For example, legally required evaluations of policies might focus on a narrowly defined set of indicators, leaving less scope for rich interpretive work. However, some common themes were generated that cut across the field of evaluations.

Partial integration; implementation gaps and the add-on role

Several participants suggested SSH are now often recognised as relevant, but are often not fully implemented in evaluations; e.g. "*Thinking specifically about the SET Plan and energy technology projects, I see a tendency in integrating SSH perspectives through cross-cutting work packages/pillars but I don't think these are considered as they should for the final assessment of the project/policy results.*"

Several participants noted that SSH tend to be treated as an "*add-on*", especially at the end of the evaluation process, e.g. they have a role at "*the end of the project, but can't intervene/change the course of (technology) development along the way, because deliverables and impacts were already set before the project started.*" This was linked with a role in creating "*acceptance*", and the fact that "*SSH tends to be used as a legitimising social reality check*".

In contrast, excellent evaluation would be "*based on a proper conceptual framing, with SSH part of the project or policy from the start*"; or as another put it, use "*co-creation approach rather than SSH serving STEM research needs*". Another participant suggested that "*We need to go beyond 'how much SSH' are involved to 'how are SSH' involved? This requires more guidance in project call texts and adapted evaluation procedures*".

Several participants suggested that evaluations should use SSH to explore failures, weaknesses and the potential for learning from these. Excellent evaluation would also create space for more deeply critical perspectives, with SSH used to query the evaluation and bring out aspects not targeted in the first instance, rather than purely evaluating pre-set goals. Participants stressed that "*SSH provides insights and descriptions of society at different levels, recognises that society is heterogenous*" and can bring a focus on complex explanations instead of strict causality. The way that evaluation 'criteria' are defined is crucial in determining what kinds of disciplines and methods will be used and valued.

Research approaches and methods

Several participants noted the dominance of economic approaches, cost-benefit analysis, foresight, modelling and statistical methods when SSH are used in evaluations; with a corresponding neglect of qualitative approaches which can lead to misunderstandings

10 http://www.theworldcafe.com/key-concepts-resources/world-cafe-method/

11 Excluding organisers

of policy/project impacts. Several stated that excellent evaluations should include qualitative methods as well as a greater use of longitudinal and citizen engagement (participatory) approaches.

Participants highlighted the importance of awareness of different SSH methods, their contribution and limitations, and transparency of methodologies. They stressed interdisciplinarity and transdisciplinarity, but not in a tokenistic sense: "*not just triangulating different types of evidence [but rather] to ensure a dialogue between disciplines from the design-phase to the evaluation*". Evaluation should also involve interaction between policyworkers and researchers. However, one participant noted that: "*It's important to remember that policies are always political and thus rarely perfect – having more evidence about impacts etc. will not change this.*"

SSH topics versus SSH methods and evidence

A participant raised the crucial point that including SSH-related topics or issues within an evaluation is not the same as including SSH methods or evidence. In other words, an SSH-related topic such as behaviour or practice can be operationalised in a reductionist way: reduced to a factor in a model, or a value in a cost-benefit analysis. This relates to a wider debate throughout the workshop about divergent Naturalist and Interpretivist approaches within the so-called SSH field (echoing the theme within the literature review regarding Individualist and Relational approaches within SSH[12]). Participants had different understandings of what SSH are, with some at the more Naturalistic end of the spectrum (tending to be those with training in Psychology and/or Economics) seeing more integration than those at the more sociological or critical end of the spectrum. For example, one participant wrote of evaluations: "*SSH [have] been used quite extensively. Because using a professional evaluation framework means you do, with Inputs, Activities, Outputs, Outcomes and longer term impacts. You look at changes in behaviour e.g. in short term outputs*". This suggests a Naturalistic view of SSH, which was critiqued by some other participants.

Naturalistic-leaning participants tended to suggest adaptive changes such as inclusion of better indicators for social outcomes (e.g. distributive effects). Meanwhile Interpretivist-leaning participants called for more radical transformations such as using SSH evaluations to critique fundamental premises of a policy or project; or a new understanding that recognises that 'evaluation' can be applied to any aspect of the social world, at any moment, rather than being a discrete project-phase.

Examples of 'good' evaluations

Among those listed by participants were:

- H2020 Framework Programme evaluation or mid-term review process (although it needs less technologically-centred indicators)
- The European Research Council (described as robust and fair)
- The Cochrane Review process (a form of systematic review of empirical evidence)
- The European Technology and Innovation Platform (ETIP) on Deep Geothermal, which has a consistent and structured way of integrating SSH topics and experts in their research agenda
- A report by Shahin et al. (2014) entitled "Building Bridges, Breaking Barriers"

4.2.3. Reviews

This session focused on the role of reviews of evidence, and the characteristics of excellent review methods. Participants identified several roles for reviews, namely to:

- Build on existing knowledge to identify research gaps, questions and priorities
- Avoid mistakes and share best practice
- Open horizons and bring in neglected perspectives
- Identify useful methods and indicators
- Cross-fertilise learnings between different sectors, disciplines and contexts (noting risks associated with decontextualizing knowledge)
- Provide recommendations for policy/practice

Characteristics of excellent review methods included:

- Transparency in methods; concepts; assumptions; boundaries; and exclusions, with a clearly defined process.
- Going beyond descriptive mapping to identify interconnections, reinforcements and themes
- Integrating SSH and STEM in a careful fashion

However, when discussing issues of quality in reviews, there was again a divergence in views based on the Naturalistic/Interpretivist spectrum, with some calling for reviews to "*have enough evidence/data to be significant*" and for "*Scientifically sound SS [Social*

12 To give a very broad-brush sketch of a highly complex subject: one could argue that there is a connection or correspondence between an Individualist ontology and a Naturalist epistemology, and an equivalent complementarity between a Relational ontology and an Interpretivist epistemology.

Sciences] and hard sciences methodologies: rigour in methods and in results interpretation"; with some stressing the role of systematic reviews. In contrast, others from the Interpretivist end of the spectrum emphasised "*Not being afraid of complexities; Taking a situational approach that considers a vast context for example time aspects, spatial aspects, cultural, regional aspects*", of "*Mapping diversities rather than being complete and exhaustive*", or of taking an "*inclusive, iterative*" approach.

Participants suggested that reviews should distil key messages, including basic messages. This was deemed especially true for literature reviews with ambitions of policy relevance and/or impact. However, the review design and communication must depend on the addressee: for example, one said that for international institutions (e.g. the Intergovernmental Panel on Climate Change (IPCC)) systematic reviews are important; for others (e.g. municipal governments) simple and easy to read highlights are much more important; with provision of examples.

Good examples of reviews listed included work by Energy Agenda; Science Advice for Policy by European Academies (SAPEA) and the IPCC; the latter being highlighted because policy-makers are involved (creating legitimacy and commitment, despite some problems of low enforcement).

4.2.4. University education, research and innovation

This session focused on the role of universities in education, training, research and innovation, and the relationship between these activities and policy impacts.

Interdisciplinarity: beyond the buzzword

Much discussion centred on interdisciplinarity, with almost all participants mentioning the importance of bridging disciplines. They suggested this can be done in education programmes/curricula, with team teaching (that enables Natural and Social Science perspectives to be present in one course). It can also be done in research groups/institutes: "*Form interdisciplinary research teams from the beginning and for long-term research (not just for one call – integration of SSH/interdisciplinary work needs time and trust!)*". One pointed out that "*in some cases disciplines are not really mixed but simply put together*" and some highlighted the need for interdisciplinarity in university structures, with appropriate leadership, role models and peer support networks. A concrete suggestion was to increase interdisciplinary/transdisciplinary Summer Schools.

Many also mentioned, as an alternative model, a problem-focussed/solution-oriented/topic/mission/challenge-based approach to education. One felt that often non-academic research institutions are more successful than traditional academic ones: the latter are stuck in disciplinary boundaries whereas the former are often centred on a problem-oriented focus from the beginning. One stressed the need to integrate a holistic approach to energy systems in the early stage of engineers'/scientists' educations (and this could equally apply to the education of future policyworkers, whose worldviews are likely to be informed by the university curricula they study).

On related themes of inclusivity, others called for greater recognition of different thematic and geographic perspectives in curricula, and for the inclusion of both qualitative and quantitative training within evidence-related skills development for students. A concrete suggestion was to make a compulsory Studium Generale (i.e. foundational learning module) with SSH methods and concepts in a graduate school format. One suggested students should be equipped not just with job-related skills, but life skills relating to their future role in societal transitions.

Policy connections

A second common theme concerned relationships between researchers and policy-makers, with several stressing the need for contacts between universities/students and policy stakeholders at different levels, including the establishment of concrete fora and mechanisms for knowledge exchange, such as policy or civil society fellowships. One suggested looking for policy windows/entry points for input, and stated that SSH can be valuable in revealing underlying policy challenges and choices available (which policyworkers are often too close to see). However, it is important to insist on conceptual/theoretical rigour, and not get carried away by day-to-day urgencies. Other suggestions included translating scientific productions into plain words for policy makers and citizens at large.

Participants pointed out that not only governmental stakeholders are important, and that researchers should have good knowledge of and open collaboration with partners from diverse non-academic sectors (civil society, NGOs, small/medium enterprises and industry, local authorities, schools, etc.). Universities can act as innovation hubs and develop integration with their locality. More generally, "*SSH can contribute not only to policy but can also inform civil society/public discourse and politics. These things should be considered as suc-*

cess". A concrete way to support impact would be to: "*Value not only peer reviewed academic articles but also social impact, policy recommendations, etc. as a form of academic evaluation (and not as an add on that you are free to choose once you have published five papers a year)*." Awards/rewards could be given for outreach activities.

Regarding this theme overall, participants cited as 'leading approaches' work by Universities including those of Delft and Durham, and the Norwegian University of Science and Technology (NTNU), as well as certain policy fellowship schemes and energy seminars.

4.3. Recommendations panel debate

4.3.1. Aims and process

This final session aimed to synthesise and operationalise some of the themes emerging from the day's discussions, in order to provide a series of concrete recommendations for various stakeholder groups. The session involved a chaired panel debate, with four experts from different sectors/backgrounds proposing their own recommendations, followed by an open plenary discussion. The panellists represented energy-SSH research; wider SSH research; an NGO (the EUA); and the EC Innovation and Networks Executive Agency (INEA).

4.3.2. Key themes

The SSH expert panellist proposed that evidence should feature in Horizon Europe funded energy research and innovation (R&I) in whatever way it makes this R&I 'useful'. He argued that this requires clarification of two assumptions.

1. Epistemologically, what does 'useful' imply?
2. Operationally, how can this be made to happen?

In answering the first question, he suggested that 'useful' requires a new understanding of the role of science in answering a 'trans-scientific problem'. Despite what is often claimed such a problem cannot be tackled by scientific curiosity, but needs 'managed research': to ensure that science that is being done makes sense in terms of the goal to which it is supposed to contribute.

In answering the second question, he proposed that the onus is on those responsible for the programming as much as the research community. Challenges on the researchers' side include 'interdisciplinarity' and also the fact that the academic incentive system is not always supportive. Regarding challenges on the programme officers' side, he noted that within H2020, 'integration' of SSH was a bureaucratic process incorporated in the European Commission project-machinery; but it also opened new avenues. For Horizon Europe, what is needed is inclusiveness and openness, but also capacity to define the problem.

The energy-SSH expert panellist argued along complementary lines for a much more challenging and radical role for SSH within energy policy. He set out a manifesto for 'Opening up the multiple relevances of SSH and evidence for energy research, innovation and policy in Europe', which involves recognising and embracing:

1. How SSH challenge instrumental forms of evidence and the linear model of science informing policy; instead they open up contested problem framings and futures, in which evidence is always social and conditional and relevant actors or 'users' are multiple and distributed.
2. How SSH open up what we mean by 'good' evidence -many more things become relevant. They open up alternative framings, visions, knowledges, values and innovations. Evidence is seen as a process: participatory and co-produced. SSH are reflexive about framing effects and uncertainties.
3. How SSH remake 'the social' and open up diverse forms of public relevance, beyond issues of communication and social acceptance. They can map diversities and systems of societal engagement with energy (e.g. mapping methods, digital methods, observatories)
4. How SSH should be 'on top not on tap': SSH should be more relevant in their own right, beyond a service role. This means SSH-led interdisciplinary programmes; SSH-led experiments and demonstrations; recognising the indirect/long-term value of 'pure' SSH; and crucially, providing adequate funding for energy-SSH.
5. Reflection about the relevance of responsible SSH and responsible evidence. Responsible innovation is a good start but this should extend to all forms of evidence and SSH themselves.

He noted that this raises important questions of whether SSH researchers should aim to fit in with existing systems of evidence production and use, or aim to transform the system; and also issues about how institutions respond to these challenges.

On the subject of institutional responses, the EUA representative stressed the importance of embedding both 'hard sciences' and SSH in energy educational and research programmes. This means adapting curricula but also developing the skill profiles both of students, teachers and researchers. She explained that many useful resources and recommendations are provided in the Roadmap for European Universities in Energy published by the EUA (2016).

Complementing these suggestions, the EC representative called for energy-SSH partners to go beyond interdisciplinarity and move towards transdisciplinary research. She argued that researchers should produce evidence for policy by using qualitative research, action research, and other bottom-up approaches, even if these are not explicitly stated in the call. She proposed researchers should aim to win over more policy-makers as ambassadors for SSH energy research, and demonstrate cases where their research results were used to create disruptive changes (perhaps even working with marketing experts). She explained that the EC should continue efforts to further formalise policy feedback from Executive Agencies to the EC. Finally, she called for researchers (and funders) to continue with projects such as Energy-SHIFTS that have a direct policy advisory role, and create an active network for the energy-SSH H2020 consortia and other SSH partners.

4.4. Reflections on generated themes

SSH as a plural

A key theme was that the category of 'SSH' is not homogenous and that the label is itself a policy construct, with 'energy-SSH' being in turn a (sub-)construct of that research and innovation policy agenda. Past work has already shown that there is major differentiation in funding, with Economics receiving much more than 'other' SSH (when Economics is classed as one of the SSH). At the same time, Humanities receive extremely little funding. As this report has highlighted, the same hierarchy is clearly embedded throughout evidence-related policy documents and research commissioning. This means that, in practice, any measures of disciplinary funding or of cross-disciplinary working should be sensitive to this plurality and especially (continue to) separate out Economics from the category of SSH.

However, the differentiation is not simply about a collection of discrete disciplines, but about more complex and fundamental epistemological positions; in other words, how is knowledge understood? As noted above, one participant usefully characterised the difference as relating to Naturalistic versus Interpretivist epistemologies within the various SSH, with the Naturalistic approaches being much closer in conceptualisations and methods to the STEM subjects – with correspondingly greater use and recognition by policy-makers. There is a connection here (though not an identity) with the differentiated treatment of quantitative and qualitative methods. Ways of making space for Interpretivist approaches are discussed below. (When we use the term disciplines in the discussions below, this should not be interpreted as referring to the conventional academic silos, but as shorthand for diverse theoretical perspectives).

Recognising this heterogeneity means being aware that interdisciplinarity can come in many forms and degrees – as well as highlighting the challenges to be overcome when theoretically-divergent researchers work together. Fundamentally, it also calls into question the idea of 'integrating' SSH into the energy research agendas of policy organisations, as it is not possible or desirable to create a single merged or unified knowledge; rather it is necessary to recognise and encompass diverse knowledges. As researchers and policyworkers we should perhaps seek dialogue, inclusion and innovation-of-ideas (discussed further below), and work towards a 'mainstreaming' of SSH that is founded on these principles.

The politics of evidence

The subservient or supplementary role of SSH reflects systemically embedded hierarchies of knowledge that exist not only among policyworkers but also within the academic community (including the phenomenon of privileging so-called 'hard science', known colloquially as Physics Envy). The workshop shone a spotlight on some mechanisms through which this hierarchy is enacted and reproduced. Discussions highlighted the cyclical relationship between the way that questions and concepts are framed, and the role accorded to different disciplines. The framing of questions determines not only the answers, but also *who* gets to answer. For example, a call text written by those with Economics training, in economistic language, literally 'scripts' the bids that are written in response, defining the concepts and models that can (and cannot) be employed. Only bids written to this script can demonstrably meet the criteria for success, especially if the evaluators hold the same worldview.

Part of this process is self-censorship, and the 'conditioning' of researchers to anticipate the wishes of 'imagined users' (e.g. funders, or policy audiences for

'impact')[13]. This can be tacit or explicit, as in the case of a participant who was told by a colleague, "*Don't criticise the Circular Economy!*". Another part of the process is the wording of call texts such as the two EC H2020 documents reviewed at the workshop. There is arguably no such thing as a 'neutral' term (e.g. consumer/citizen/user, as discussed above) – all are theory-laden. Using diverse terms is a starting point, but this should not simply be a tokenistic list, or a haphazard shoe-horning of terms into pre-defined theoretical frameworks. For example, a hypothetical instruction to, "*Assess the significance of different financial incentives and information in changing the behaviour of consumers, citizens and/or users etc.*" would NOT represent meaningful engagement with alternatives to an economistic worldview. Rather, calls should create space for different understandings and interpretations of their core concepts. A wording that recognises disciplinary heterogeneity might make it explicit that there are different angles on the research topic, or conceptualisations of the problem, and that a bid is not expected to encompass all of these, but rather to be transparent and reflexive about its particular problem-framing. Another practical suggestion is to make sure that call texts are written and reviewed by experts from genuinely diverse disciplinary/theoretical backgrounds, including the Humanities and Interpretivist Social Sciences.

The hegemony of Economics

Economics is the often-invisible norm within energy research, especially that which informs policy. As noted in section 2.4 above, this relates fundamentally to the framing and justification of research as innovation for economic growth (which is deeply embedded within EU policy frameworks). It plays out in call texts, consultations, funding and many other aspects of research and policy processes. To even begin to challenge this embedded worldview, we need to first make it visible. A step in this direction would be to stop using the term 'socio-economic', in which the 'socio' is a kind of figleaf; a modifier that does not modify. It creates the appearance that 'the social' is present, when it is not. In other words, if a call is focused on modelling the behaviour of consumers as economic agents, then it should not be called 'socio-economic research', but economic research. Also, any measures of disciplinary funding or representation, or of cross-disciplinary working should (continue to) separate out Economics from SSH (as mentioned above).

Making space for SSH

A key theme of the workshop was the need to shift the question, asking not just, 'Do SSH get a voice?', but 'When, how, and how much of a voice?', i.e. are SSH part of agenda-setting or an afterthought? Are SSH terms dropped in as buzzwords or are SSH framings taken seriously? Are SSH contributions explicitly encouraged, or relegated to the 'Other' box? Are SSH seen merely as tools to serve pre-set ends, or actively engaged in defining those ends? Throughout the workshop, participants debated ways of ensuring a more meaningful role for SSH.

One practical idea would be to include a 'Wildcard' or 'Innovation' box on funding applications (e.g. with the opening 'Concept' section of H2020 proposals) – a dedicated space for researchers to add their own research question that offers a new angle on the pre-set questions; e.g. how they connect with another scale; their historical context; different types of impacts; different directions or processes of causality. If certain disciplines (such as Humanities) are not explicitly given a role, then this could be a space for their contribution. If a method or approach is specified in the call, then this could be a space for alternative methods; e.g. participatory, qualitative, longitudinal, action research, experimental methods, etc. This call element could make important contributions to knowledge by facilitating genuinely innovative thinking that challenges the assumptions of the pre-set questions. Crucially, this text would have to be established as a substantive component of the assessment process (otherwise it would risk becoming a meaningless 'Other' box).

Another possibility would be to embed epistemological reflexivity and transparency as a requirement within funding application forms (complementing the SHAPE ENERGY principle that SSH should be included in the 'Concept' section of any funding application). This would help to show where SSH are being tacked onto a bid as an afterthought, and where they are actually informing project design. It would be of benefit to the researchers when they come to implement the project, as they will already have started this conversation (avoiding misunderstandings later on). It would also support the goals (mentioned in the University World Café section) about true interdisciplinarity as a meaningful dialogue that starts even before the project inception.

SSH and the potential for 'deep innovation'

It is clear that SSH can offer much more to energy policy than they do at present; including reframing questions and suggesting new answers. Excluding

13 See also Genus et al. (2018) on imaginaries of SSH and policy integration in H2020.

these contributions means putting blinkers on the knowledge available to policy, and risks reproducing old policy models that could be improved. It leads to research that is repetitive and systematically ignores important social questions, falling into recurring pitfalls and faulty assumptions (e.g. people as rational actors; the value-action gap; narratives of smart utopia). In other words, it stifles innovation. The term innovation often refers to technical novelty, and sometimes to new social phenomena (as discussed in the report on Social Innovation (de Geus and Wittmeyer, 2019), published alongside this report). Based on this Evidence workshop, we propose here a new conceptualisation of 'deep innovation', or innovation-of-ideas, referring to the application in policy of innovative ways of thinking about energy and society, that go beyond the dominant techno-economic paradigm. SSH have a crucial role to play in developing this deep innovation. Arguably, current policy challenges facing Europe, such as climate change and the need for a just and sustainable energy transition, make this role more important than ever.

Appropriately, the insights about the use of SSH evidence presented in this report are themselves fundamentally grounded in ways of thinking that are inspired by SSH, and serve to exemplify these. These insights are about research and policy as *practices* and as *dynamic processes*; about many kinds of *agency*: of people and institutions, but also of documents, language and ideas. They embrace *heterogeneity* and *complexity*, and challenge assumptions; and they engage *normatively* and *reflexively* with our roles as researchers and policyworkers within the systems in question.

SSH are sometimes described as a toolkit. The discussions in this workshop gave rise to various suggestions as to how these tools could be strengthened and sharpened to facilitate their more effective use in energy policy. However, they also raised the possibility that these tools could be used differently – perhaps to throw a metaphorical 'spanner in the works' or even to dismantle and reassemble dominant agendas in energy research and policy.

A short summary of key recommendations is presented in Section 5. While these recommendations are tailored for the audiences specified here, the points raised are also of relevance for other energy researchers (including those in interdisciplinary projects), and for policy-makers across the energy sphere, since all these groups have a stake in ensuring a rich and productive contribution of SSH to energy policy-making.

5. Recommendations

For Energy-SHIFTS activities

- Recognise the differentiation of disciplines and perspectives within SSH: be cautious of stating that "SSH is…' and emphasise representation of the most marginalised 'voices' within SSH throughout all Energy-SHIFTS activities. Be sure to prioritise the provision of opportunities for less conventionally-used SSH disciplinary perspectives, and in particular ensure that Economics is correspondingly de-prioritised wherever appropriate, given that it has dominated the policy interpretation and use of 'SSH' evidence.
- Make a strong case not only for SSH to serve as a more efficient tool for pre-set ends, but also as an opportunity for 'deep innovation'.
- Reveal and challenge the dominance of techno-economic and Individualised forms of evidence. Make visible the mechanisms by which these knowledge hierarchies and exclusions are reproduced (such as document wording, advisor and evaluator selection, and self-censorship) and look for entry points where these can be questioned or overturned.
- Within Energy-SHIFTS activities, (continue to) ensure that data-gathering exercises are interactive, inclusive, participatory, and linked to real-world examples where possible.
- For the targeted participant observation (Work Package 4), be sure to use the reflexive fieldnotes collated to emphasise the contextual, value-laden judgements and processes that are embedded in policy recommendations and their supporting evidence (e.g. Work Package 2's Horizon Scan recommendations for future energy-SSH funding). Show objectivity as a fallacy.
- For the Evaluation process (Work Package 4), ensure that feedback surveys for participants in Energy-SHIFTS activities include a specific question around evidence. In particular, this could focus on how and to what extent the activity contributed to the project's goal of supporting the meaningful use of SSH evidence within energy policy-making, including knowledge from rarely-heard voices. This could be tailored for specific activity evaluations.
- Design the Working Groups (Work Package 2) so that their names and terms of reference directly address existing EU Energy Union priorities, which are driven by STEM-led framings. However, do not necessarily endorse and accept these dominant framings, but rather tackle them head on and provide an explicit and SSH-led critique of their assumptions and implications.

For funding of EU energy research

- Continue to embed the mainstreaming of SSH, not aiming for 'integration' of all disciplines into a single unified approach, but rather for inclusivity and dialogue between diverse perspectives and forms of evidence.
- Ensure that the EC has a 'stick' to enforce the Framework Programme commitment to SSH mainstreaming (e.g. incorporate it into mandatory eligibility requirements for proposals), because at present there is no consequence for lack of SSH integration.
- Stop using the term 'socio-economic', in which the 'socio-' is intended as a modifier, but actually does not modify. If societal considerations are truly of interest, then state this in clear and specific terms – it will significantly help to bring in non-economic communities and also potentially start to develop a new problem framing. Recognise that Economics and Business Management are not SSH.
- Ensure the contribution of SSH is meaningful, not tokenistic, with SSH involved in the design stages of both calls and of projects. Consider how not only SSH *topics*, but also SSH *methods* and SSH *evidence* can be built into funding programmes.
- Engage diverse SSH experts (including those from Relational or Interpretivist Social Sciences and from Humanities) as active participants in all stages of the research funding process, from agenda-setting to evaluation.
- Engage SSH researchers who themselves do 'research on research' as collaborators, or at least advisors, in the planned monitoring activities of SSH integration in Framework Programmes – especially if there are to be strategic changes to the approach when evaluating Horizon Europe.
- Recognise and value the role of SSH in providing deep innovation in ideas and challenging dominant assumptions; ensure funding mechanisms create spaces for this kind of contribution, recognising in particular the need to create space for complexity.

- Engage SSH researchers in better understanding how current dominant political ideologies may shape evidence gathering (including the structure of funding calls) and thereby hinder deep innovation; and deliberately facilitate cross-cutting and challenging research on this topic.

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7. References

Business, Energy and Industrial Strategy Committee, 2018. *BEIS Committee launch energy efficiency inquiry*. News item, 19 November 2018. Available at https://www.parliament.uk/business/committees/committees-a-z/commons-select/business-energy-industrial-strategy/news-parliament-2017/energy-efficiency-inquiry-launch-17-19/. Accessed 16.08.2019.

Centre for Research into Energy Demand Solutions (CREDS), 2019. *Written evidence submitted by UCL Energy Institute (ENE0039) to BEIS Select Committee Inquiry on energy efficiency in buildings. Written evidence from the UKRI Centre for Research into Energy Demand Solutions*. Available at http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/business-energy-and-industrial-strategy-committee/energy-efficiency/written/95116.html. Accessed 16.08.2019.

EC, 2015. *Communication from the Commission: Towards an Integrated Strategic Energy Technology (SET) Plan: Accelerating the European Energy System Transformation*. 15.9.2015 C(2015) 6317 *final*. Brussels: EC.

EC, 2019. *Horizon 2020 Work Programme 2018-2020 10. Secure, clean and efficient energy*. Brussels: EC.

EC Bureau of European Policy Advisers, 2010. *Empowering people, driving change: Social innovation in the European Union*. Brussels: EC.

EC Directorate-General for Energy, 2015. *Consultation Questionnaire (web based) Preparation of a new renewable energy directive for the period after 2020*. Available at https://ec.europa.eu/energy/sites/ener/files/documents/RED%20II%20Public%20Consultation_0.pdf. Accessed 16.08.2019.

EC Directorate-General Regional and Urban Policy (DG REGIO) and Directorate-General Employment, Social affairs and Inclusion (DG EMPL), 2013. *Guide to Social Innovation*. Brussels: DG REGIO and DG EMPL.

EC Joint Research Centre (JRC), 2014. *Strategic Energy Technology (SET) Plan. Towards an integrated roadmap: research and innovation challenges and needs of the EU energy system*. JRC93056. Brussels: JRC.

Energy-SHIFTS, 2019. *Ethics Guidelines* (confidential deliverable to the EC). Cambridge: Energy-SHIFTS.

European Alliance for Social Sciences and Humanities (EASSH), 2019. *Interdisciplinary perspectives for Horizon Europe: Lessons from the 4th SSH Integration Monitor Report*. Paris: EASSH.

European University Association (EUA), 2016. *Roadmap for European Universities in Energy*. Brussels: EUA.

Foulds, C. and Christensen, T.H., 2016. Funding Pathways to a Low-carbon Transition. *Nature Energy*, 1(7), pp.1-4.

Foulds, C. and Robison, R., 2017. *The SHAPE ENERGY Lexicon - interpreting energy-related social sciences and humanities terminology*. Cambridge: SHAPE ENERGY.

Foulds C., and Robison R., 2018. Mobilising the Energy-Related Social Sciences and Humanities. In: C. Foulds and R. Robison. eds. *Advancing Energy Policy: Lessons on the integration of Social Sciences and Humanities*. Cham: Palgrave MacMillan. pp.1-11.

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

Genus A., Fahy F., Goggins G., Iskandarova M. and Laakso S., 2018. Imaginaries and Practices: Learning from 'ENERGISE' About the Integration of Social Sciences with the EU Energy Union. In: C. Foulds and R. Robison. eds. *Advancing Energy Policy*. Cham: Palgrave Pivot. pp 131-144.

Geus, T. de and Wittmeyer, J., 2019. *Social Innovation in the Energy Transition: Examining diversity, contributions and challenges. Scoping workshop report*. Cambridge: Energy-SHIFTS.

Jeuken, Y.R.H. and Mourik, R.M., 2019. *Collaborative research strategies in energy and sustainability related Social Sciences and Humanities: A literature review and practical guide*. Cambridge: SHAPE ENERGY.

Kania, K., Lemaire, C. and Swinnen, L., 2019. *Integration of Social Sciences and Humanities in Horizon 2020: Participants, Budget and Disciplines – 4th Monitoring report on SSH flagged projects funded in 2017 under the Societal Challenges and Industrial Leaderships priorities*. Brussels: European Commission Directorate-General for Research and Innovation.

König, T., 2019a. *SSH-Impact Pathways and SSH-Integration in EU Research Framework Programmes*. Institute for Advanced Studies (IHS) Working Paper 5. Vienna: IHS.

König, T., 2019b. Social Sciences and Humanities research matters - Guidelines on how to successfully design, and implement, mission-oriented research programmes. In: Centre for Social Innovation, *Impact of Social Sciences and Humanities for a European Research Agenda Valuation of SSH in mission-oriented research.* Vienna, 28-29 November 2018. Vienna: Centre for Social Innovation. pp.26-29.

Marsden, G., 2019. Rebound. In: J. Rinkinen, E. Shove and J. Torriti. eds. 2019. *Energy Fables: Challenging Ideas in the Energy Sector*. Abingdon: Routledge. pp.39-47.

Oliver, K., and Boaz, A., 2019. *Transforming evidence for policy and practice: creating space for new conversations.* Palgrave Communications, 5, art. no. 60. https://doi.org/10.1057/s41599-019-0266-1.

Rinkinen, J., Shove, E. and Torriti, J., 2019. eds. *Energy Fables: Challenging Ideas in the Energy Sector*. Abingdon: Routledge.

Robison, R. and Foulds, C., 2017. Creating an Interdisciplinary Energy Lexicon: Working with Terminology Differences in Support of Better Energy Policy (paper 1-267-17). In: ECEEE, *Summer Study on Consumption, Efficiency and Limits*. Presqu'ile de Giens, France, 29 May–3 June 2017. Stockholm: ECEEE. pp. 121–130.

Robison, R., Foulds, C. et al., 2018. *Research & Innovation Agenda (RIA) 2020-2030. Support the integration of Social Sciences and Humanities research in Horizon Europe*. Cambridge: SHAPE ENERGY.

Royston, S. and Selby, J., 2019. Non-energy policy. In: J. Rinkinen, E. Shove and J. Torriti. eds. 2019. *Energy Fables: Challenging Ideas in the Energy Sector*. Abingdon: Routledge. pp 112-118.

Shahin, J., Meyer, T., Kloza, D. and Biedenkopf, K., 2014. *Building Bridges, Breaking Barriers. The Smart Approach to Distance Between Disciplines in Research Projects.* Brussels: European Commission Directorate-General for Communications Networks, Content and Technology.

SHAPE ENERGY, 2018. *7 principles for energy-SSH in Horizon Europe: SHAPE ENERGY Research & Innovation Agenda 2020-2030*. Available at: https://shapeenergy.eu/index.php/agenda-2020-2030/ Accessed 06.09.2019.

Shove, E., 1998. Gaps, barriers and conceptual chasms: theories of technology transfer and energy in buildings. *Energy Policy*, 26(15), pp.1105-1112.

Shove, E., 2019. Energy efficiency, In: J. Rinkinen, E. Shove and J. Torriti. eds. 2019. *Energy Fables: Challenging Ideas in the Energy Sector*. Abingdon: Routledge. pp.29-38.

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 and Social Science*, 6, pp.95-99.

Stock, P., and Burton, R.J.F., 2011. Defining Terms for Integrated (Multi-Inter-Trans-Disciplinary) Sustainability Research. *Sustainability*, 3, pp.1090-1113.

Strassheim, H. and Kettunen, P., When does evidence-based policy turn into policy-based evidence? Configurations, contexts and mechanisms. *Evidence and Policy*, 10(2), pp.259-277.

Strengers, Y. 2013. *Smart Energy Technologies in Everyday Life: Smart Utopia?* Basingstoke: Palgrave Macmillan UK.

Turner, B. S. 2006. Discipline. *Theory, Culture and Society*, 23(2–3), pp.183–186.

Appendices

Appendix 1: Reflecting on Evidence task sheet

Aim

The aim of this session is to explore how Social Sciences and Humanities, and evidence more generally, are understood and presented in some examples of policy-related documents.

Task

This session has three parts:

1. Each participant reads two documents and annotates them
2. Participants discuss their documents in pairs
3. The whole group discusses themes emerging from the exercise

You will find a pack of seven numbered documents attached. Details of the pairs, and which documents to read and annotate, are below:

Pair	Theme	Documents to annotate
[Names removed for GDPR compliance]	The SET Plan	1 and 2
	The SET Plan	1 and 2
	The SET Plan	1 and 2
	Horizon 2020 (Clean Energy Transition) and the Renewable Energy Directive	3 and 4
	Horizon 2020 (Clean Energy Transition) and the Renewable Energy Directive	3 and 4
	Horizon 2020 (Modelling efficiency and demand) and the Renewable Energy Directive	4 and 5
	Horizon 2020 (Modelling efficiency and demand) and the Renewable Energy Directive	4 and 5
	Horizon 2020 (Modelling efficiency and demand) and the Renewable Energy Directive	4 and 5
	Energy efficiency (UK)	6 and 7
	Energy efficiency (UK)	6 and 7

Things to note when annotating the documents:

- Please write in English, and as clearly as possible – we will collect the annotated documents to use in our analysis
- Please don't worry if you don't have time to finish your documents! (Equally, if you finish early, feel free to annotate other documents too.)

Some things you may wish to think about are:

- What assumptions about evidence does this document make?
- What role does this document give to SSH, and to particular SSH disciplines?
- Do you agree with the way that research aims, questions and/or methods are set out in this document; how could or should they be framed differently?

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Appendix 2: List of documents used in Reflecting on Evidence session

DOCUMENT 1
Organisation: EC Joint Research Centre
Document type: Report on stakeholder consultation (extract)
Date: Dec 2014
Strategic Energy Technology (SET) Plan
Towards an integrated roadmap: research and innovation challenges and needs of the EU energy system. JRC93056

DOCUMENT 2
Organisation: EC
Document type: Communication (extract)
Date: Sep 2015
COMMUNICATION FROM THE COMMISSION: Towards an Integrated Strategic Energy Technology (SET) Plan: Accelerating the European Energy System Transformation
Brussels, 15.9.2015 C(2015) 6317 final

DOCUMENT 3
Organisation: EU Horizon 2020
Document type: Funding call
Date: Oct 2017
Social Sciences and Humanities (SSH) aspects of the Clean-Energy Transition
ID: LC-SC3-CC-1-2018-2019-2020
Focus area: Building a low-carbon, climate resilient future (LC)
Call name: BUILDING A LOW-CARBON, CLIMATE RESILIENT FUTURE: SECURE, CLEAN AND EFFICIENT ENERGY

DOCUMENT 4
Organisation: EC Directorate-General for Energy
Document type: Consultation (call for evidence) (extract)
Date: Nov 2015
Consultation questionnaire (web-based)
Preparation of a new renewable energy directive for the period after 2020

DOCUMENT 5
Organisation: EU Horizon 2020
Document type: Funding call
Date: Oct 2017
Socio-economic research conceptualising and modelling energy efficiency and energy demand
ID: LC-SC3-EE-14-2018-2019-2020
Focus area: Building a low-carbon, climate resilient future (LC)
Call name: BUILDING A LOW-CARBON, CLIMATE RESILIENT FUTURE: SECURE, CLEAN AND EFFICIENT ENERGY

DOCUMENT 6
Organisation: Business, Energy and Industrial Strategy Committee (UK parliamentary committee)
Document type: Announcement of inquiry (call for evidence)
Date: November 2018
BEIS Committee launch energy efficiency inquiry

DOCUMENT 7
Organisation: Centre for Research into Energy Demand Solutions (UK research centre)
Document type: Response to call for evidence (extract)
Date: January 2019
Written evidence submitted by UCL Energy Institute (ENE0039)
BEIS Select Committee Inquiry on energy efficiency in buildings
Written evidence from the UKRI Centre for Research into Energy Demand Solutions (CREDS)

Appendix 3: Worksheets

World café activity

Name _____

Task

You have ~20mins to complete the following three worksheets, which will then be the prompts for discussion in the three café conversations post-lunch.

The café conversation topics are:

A. Evaluating successes and failures **[Third floor Plenary meeting room]**
(Rapporteur: Sarah Royston, Anglia Ruskin University)

B. Reviewing existing evidence [**Bach room, first floor]**
(Rapporteur: Chris Foulds, Anglia Ruskin University)

C. University approaches in energy-related education, research and innovation for policy development **[Ravel room, first floor]**
(Rapporteur: Douglas Halliday, Durham University and EUA Energy and Environment Platform)

Please do write clearly and in English, and also ensure that your name is provided above (in case we need to follow up on a specific point or struggle to read your handwriting). We plan to collect these worksheets for analysis purposes.

Group allocations:

[Names removed for GDPR compliance]

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Café A: *Evaluating successes and failures*

Café A aims to explore how SSH is currently used in evaluations of energy-related policies and projects, the implications of this, and how SSH evidence could be better used in future evaluations.

A1. In your experience, what kind of role does SSH evidence play in evaluations of energy-related policies and projects?

A2. What would be the characteristics of an excellent evaluation that uses energy-SSH evidence to inform policy-making? (This can include methods and/or outputs).

A3. Please list any examples of specific evaluation processes or publications that you regard highly. If possible, please briefly explain why.

Café B: *Reviewing existing evidence*

Café B aims to take discussion beyond primary research, by focusing on review exercises that distill existing 'state-of-the-art' energy-SSH thinking and evidence.

B1. How may a review of past energy-SSH research be useful (or not) for policy?

B2. What does it mean to do an excellent review of energy-SSH research evidence for policy, in terms of the methodological process of collating that evidence? *(E.g. what procedures and rules should be followed? what should be included/excluded? etc.)*

B3. Please list any examples of literature reviews that you regard highly. If possible, please briefly explain why.

Café C: *University approaches in energy-related education, research and innovation for policy development*

Café C aims to explore how universities can adapt their current research and training provision to better integrate SSH concepts, methods and approaches into a holistic energy training environment that enables early career researchers to better understand the energy challenge and the need for robust evidence.

C1. In your experience what would be an effective approach to integrate SSH into energy-related education, research and innovation to develop evidence related skills?

C2. What factors should universities consider to enable success in integrating SSH, science and technology into energy programmes to ensure robust policy engagement?

C3. What approaches do you regard as being leading in this area at this time? What makes them successful?

Appendix 4: Blog

'*Greta vs. IPCC – The role of SSH in today's energy policy making*' by Anaïs Varo (University of Girona), Boris Gotchev (Institute for Advanced Sustainability Studies and Technical University of Munich), and Sarah Glück (Zeppelin University), at: https://energy-shifts.eu/greta-vs-ipcc-the-role-of-ssh-in-todays-energy-policy-making/

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energy-shifts.eu

Energy -SHIFTS

Energy Social sciences & Humanities Innovation Forum Targeting the Set-Plan

a.r.u. Global Sustainability Institute

drift for transition

EERA European Energy Research Alliance

acento comunicación

Jagiellonian University in Kraków

NTNU Norwegian University of Science and Technology

E3G