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The SHAPE ENERGY Summer School interdisciplinary debates with PhD researchers

Nathalie Ortar, Delphine Burguet, Pauline Claudot, Chris Foulds

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The SHAPE ENERGY Summer School

interdisciplinary debates with PhD researchers



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Executive summary

The European Union (EU) funded Horizon 2020 'Social sciences and Humanities for Advancing Policy in European ENERGY' (SHAPE ENERGY) project organised an international summer school for Early Stage Researchers (ESRs) working within energy-social sciences and humanities (energy-SSH). This multidisciplinary summer school – entitled 'Advancing Energy Policy Summer School' – focused on how energy-SSH research can contribute to tackling the many energy-related challenges in Europe. Key energy topics were discussed with an emphasis on interdisciplinarity and on the translation of academic research into policy and practice, including:

- Global energy dilemmas;
- Energy transition;
- Public engagement and energy citizenship;
- Consumption and social practices;
- Energy poverty.

Advanced researchers and practitioners involved in leading European energy projects were presenting their expertise and the role of energy-SSH research for policy and practice while the summer school was also an opportunity to meet and collaborate with other ESRs from a range of disciplines.

Analysing the outputs of the summer school allowed us to draw attention to four recommendations, which could serve as points of reflection during the organisation of any future ESR and/or interdisciplinary SHAPE ENERGY activities:

- Make more explicit/visible the 'implicits' of the various disciplines and, while proposing a workshop, consider more carefully the time needed by each discipline to produce a 'rigorous' outcome/output.
- Pay attention to the fact that mainstream economic thinking innervates all disciplines. This element should be taken into greater consideration in prospective research as it influences the way the future is envisioned and closes alternative paths that could have been taken.
- Better consider the cultural background of the participants when asking them to work together, or at least make more explicit not only the rules of the exercise but also the cultural implicit behind it.
- Be sensitive to the gender and age of the participants, as these obviously play a role in how individuals express and put themselves forward. As it is crucial to devote time and resources, and to employ experts when implementing gender perspectives in research programmes and policy-making; more attention should be paid to this point as well as to how older researchers might influence the youngest.



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Acronyms

ARU	Anglia Ruskin University
eceee	European Council for an Energy Efficient Economy
ENTPE	École Nationale des Travaux Publics de l'État
ESR	Early-Stage Researcher
EU	European Union
SSH	Social Sciences and Humanities
STEM	Science, Technology, Engineering and Mathematics



1. Introduction

The summer school 'Advancing Energy Policy Summer School' presented in this report is part of the ESR¹ programme, which also comprises 20 SSH placements into 10 existing Horizon 2020 energy projects.

The 'Social Sciences and Humanities for Advancing Policy in European Energy' (SHAPE ENERGY²) Horizon 2020 project organised an international summer school on energy and social sciences and humanities. This multidisciplinary³ summer school for ESRs working within SSH energy research was focused on how SSH research can contribute to tackle the many energy-related challenges in Europe. Key energy topics have been discussed with an emphasis on interdisciplinarity and the translation of academic research into policy and practice.

The summer school focused on exploring the value of SSH with ESRs, not just to support the implementation of technical solutions, but to investigate the social goals upon which technological goals are based. Beyond its educational contributions, the summer school also aimed to get the ESRs to meet female and male academics and practitioners coming from different disciplines and professional horizons. The ESRs themselves came from a broad diversity of countries and disciplines.

In this report, the first part details the programme, who the participants were, academics as well as ESRs, their research fields and topics. In the second part the reader will find an analysis of some of the interactions as well as some key findings. We finish with conclusions about the lessons taken from the summer school about interdisciplinarity and the influence of gender and age.

1 Early-Stage Researchers (PhD students) are those who are, at the time of selection by the host institution, in the first four years (full-time equivalent) of their research careers and have not yet been awarded a doctoral degree. This is measured from the date when they obtained their MSc degree which formally entitles them to embark on a doctorate (as a PhD student). <http://www.oncornet.eu/index.php/recruitment/2-uncategorised/79-esr>

2 www.shapeenergy.eu

3 See [Appendix 1](#) for a definition of multidisciplinary, interdisciplinarity and transdisciplinarity.



2. Aims and participants of the summer school

Designed to welcome 40 ESRs, the summer school was an opportunity for participants to reflect on how to frame questions that can help embed SSH into existing initiatives so that their impact is maximised. The school was built on both the eceee summer study 2017⁴ by reflecting on its learnings as well as the core aims and activities of the wider SHAPE ENERGY project.

In the context of all this, the summer school programme was designed to address three pedagogical aims:

1. To become familiar with key issues for future EU energy research and, in particular, how this is addressed by various disciplines;
2. To learn more about the workings and possibilities of interdisciplinary investigation;
3. To develop an understanding of how various stakeholders address the question of energy.

Alongside these pedagogical aims, the summer school also facilitated networking amongst the ESRs who came from a diverse range of geographical and disciplinary backgrounds.

Section 2 provides more detail on the aforementioned. Specifically, we discuss the summer school programme and speakers, secondly a presentation of the ESRs and thirdly of their research topics.

2.1. Programme and speakers

To build the programme⁵, key issues for the EU were first identified, then some thinking has been given on how to address those issues from a multidisciplinary perspective and thirdly how to tackle interdisciplinarity.

2.1.1. Identifying key issues

The key issues identified follow the aims of the SHAPE ENERGY project to investigate how social sciences tackle the question of energy and address key questions for the EU that had been presented by Dr. Gerd Schönwälder in February 2017 in Cambridge, at the SHAPE ENERGY academic workshop⁶. The five identified key themes are:

- Global energy dilemmas;
- Energy transition;
- Public engagement and energy citizenship;
- Consumption practices and social practices;
- Energy poverty.

Given that most of these issues are already questioned by the SSH, a multidisciplinary presentation of the state-of-the-art of those key energy challenges was therefore not only possible but presented a real interest regarding the pedagogical aims of the summer school. Each of the identified challenges were indeed presented by at least one advanced academic researcher, most of the time by two, coming from two different disciplinary perspectives in order for the ESRs to (1) better understand how the same problem can be conceptualised very differently and (2) reflect on the value of that confrontation.

4 <https://www.eceee.org/summerstudy/>

5 See Appendix 2 for a detailed presentation of the programme.

6 See https://shapeenergy.eu/wp-content/uploads/2017/08/SHAPE_ENERGY_Academic_Workshop.pdf



2.1.2. Multidisciplinarity to address key issues

A multidisciplinary approach was therefore addressed by exposing the students to a wide audience of disciplines. The experienced academics presenting their work, or organising workshops, came from a large panel of SSH disciplines⁷: Human Geography, Economics (issued from different theoretical backgrounds), Social Psychology, Political Science, Sociology, Anthropology, Communication Science, Management Science, Engineering (Figure 1). The aim was to trigger interest in interdisciplinary approaches.



Figure 1 – Panels of scientific disciplines of the speakers at the SHAPE ENERGY ‘Advancing Energy Policy’ Summer School

Particular attention was also paid to the gender ratio in order to maintain a balance between male and female speakers which we were able to obtain despite the fact that, while initially looking for speakers, the names given by male and female colleagues were male most of the time. Without a specific effort to maintain a gender ratio, the speakers would have therefore been mostly male.

We additionally included speakers from across Europe (Figure 2). However, most speakers were located in Northern Europe and in France, with two speakers coming from the organising institution (ENTPE). It was difficult to include speakers from Eastern European countries in the event programme, despite several attempts, for several reasons, such as: SSH research in energy is underdeveloped in Eastern Europe and, as a result, those involved are already part of several consortia and have little time for additional activities; the event was held during summer vacation time, which was useful in one sense as it did not conflict with teaching times, but it did clash with some possible speakers’ holiday plans; and for those involved within EU policy-making circles- a large consortium of researchers was coincidentally meeting in Brussels during the very same days.



Figure 2 – Countries of the speakers' academic institutions represented at the SHAPE ENERGY ‘Advancing Energy Policy’ Summer School.

⁷ See Appendix 4 for a detailed presentation of the speakers.



2.1.3. Tackling interdisciplinarity: working in groups during the workshops

The value of multidisciplinary and interdisciplinary approaches was also tackled during the various workshops. The talks aimed to provide general knowledge about some specific topics and an understanding about the theoretical and methodological backgrounds used by a particular discipline. The workshops aimed to put interdisciplinarity into action by encouraging ESRs from different disciplinary backgrounds to work together collaboratively and to pose/address interdisciplinary questions.

Across the various workshops, the ESRs were asked:

- *To address an energy challenge:*
The challenge concerned one or more specific research problems that every discipline contributes to with their own theories and methods⁸. In group collaboration and discussions, approaches to tackle the challenge have been developed and compared among the participants to gain a deeper understanding of interdisciplinarity.⁹
- *To create consistent socio-technological energy scenarios:*
Future technological and societal developments are often interlinked. The cross-impact balance analysis provides a method to systematically assess and visualise these inter-linkages in order to create consistent scenarios, i.e. for modelling or policy advice. During the workshop, participants have learned how to generate consistent socio-technological scenarios and got insights of the advantages and disadvantages of scenario-building.
- *To reflect on energy citizenship:*
Reflect on what energy citizenship can be and how this question can be tackled by both energy-SSH researchers and policy-makers.
- *To experiment in living labs:*
The ESRs experimented in the various labs of ENTPE and met practitioners working for the city of Lyon as well as related consultants. These activities were arranged at the end of the living labs sessions and represented good occasions to confront different thinking. The ESRs met researchers in Mechanical Engineering and Building Energy.
- *To translate academic research into policy and practice:*
A translation of research into policy-making has also been presented through the current EU Horizon 2020 project, ENERGISE.¹⁰

To summarise, the five intensive days were academically challenging, with presentations, indoor/outdoor interactive workshops, and informal networking activities during breaks, at lunchtime and in the evening. Participants were invited to consider how to best represent and understand energy from different angles and disciplinary perspectives, and were encouraged to think about how the theoretical and methodological issues discussed relate to their own work. The next subsection will present more background on the personal background of the participating ESRs.

2.2. Backgrounds of the Early-Stage Researcher participants

To reach a large diversity of ESRs, in term of disciplines and geography, we used several academic and professional networks to disseminate the Call for Applications. The networks contacted included researchers and ESRs in SSH in general and in professional energy networks at a European-level. In the second phase, SSH researchers and ESRs working on energy were identified and contacted, in particular through Eastern and Central Europe.

⁸ See [Appendix 3](#) for a detailed presentation of the challenges.

⁹ This has parallels with SHAPE ENERGY's Research Design Challenge tasks, running 2017-2018, with funding available for external collaborators: <https://shapeenergy.eu/index.php/activities/research-design-challenge/>

¹⁰ <http://energise-project.eu/>



Group photo of the participants at the SHAPE ENERGY 'Advancing Energy Policy' Summer School, in ENTPE

42 ESRs registered for the summer school. Out of the 42, only 26 actually attended, but they nevertheless represented an interesting mix of nationalities and disciplines. Most of those who did not attend, dropped out for financial reasons and belonged mostly to Central and Eastern European countries, hence why the subset of these ESRs was under-represented at the summer school. The gender ratio, residential and academic localisation are presented in the following parts.

2.2.1. Gender

Although rather balanced, the gender ratio shows a slightly higher representation of women (59%) to men (Figure 3) which is a bit surprising when thinking about the difficulty we faced finding female speakers, however we do not have any explanation for this outcome.

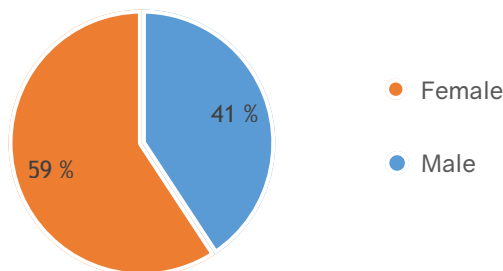


Figure 3 – Gender balance of the Early-Stage Researchers attending the SHAPE ENERGY 'Advancing Energy Policy' Summer School



2.2.2. Countries of residence

Some countries of residence were much more represented than others (Figure 4), in particular France (8 ESRs; 29%) and Germany (5 ESRs; 18%). However, we do note that the countries of residence for the ESRs are not necessary the same as those of their institution – the ESRs showed considerable mobility between their home countries, their academic institutions, and their fieldwork locations.

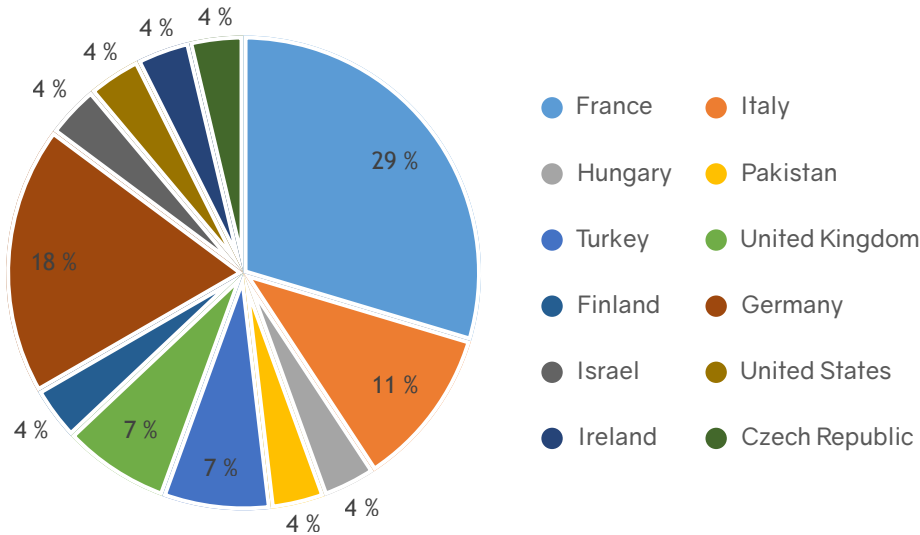


Figure 4 – Countries of residence of the Early-Stage Researchers attending the SHAPE ENERGY 'Advancing Energy Policy' Summer School

2.2.3. Academic institutions

Among the academic institutions, the United Kingdom was most represented. This was followed by France and Italy (Figure 5).

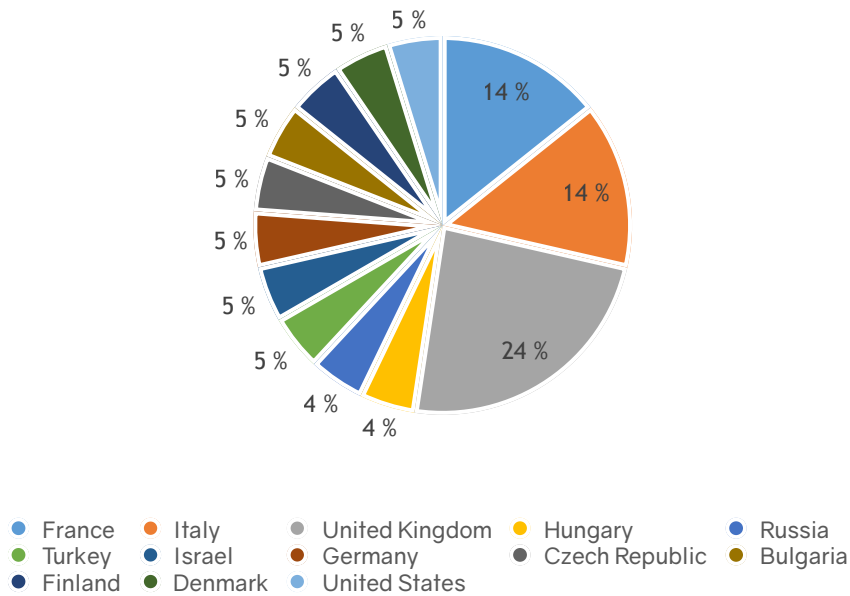


Figure 5 – Countries of the ESRs' academic institutions represented at the SHAPE ENERGY 'Advancing Energy Policy' Summer School



For this result as well as the previous one, we do not have any real explanation except that for the presence of French ESRs, the call might have circulated more than in other national contexts. As for the domination of UK institutions, two explanations are possible: as the summer school was held in English, those already fluent in the language were probably more likely to apply. It might also reflect a dominance of British institutions in this field of research.

2.3. Research interests of the Early-Stage Researchers

This subsection presents the disciplines, main areas and research foci of the participating ESRs and their fieldwork locations¹¹.

2.3.1. The disciplines

Despite a willingness to reach out to a large variety of disciplines (Figure 6), Economics (38%) was the dominant discipline of the ESRs present at the summer school. Political Science (21%) was the second dominant discipline. Urban Studies (14%), Human Geography (10%), and Sociology (14%) were slightly equally represented with 14% to 10% of the participants. Anthropology (3%) was the only discipline represented by one person.

The diversity of disciplines was interesting as the paradigms, epistemological frameworks and methodological approaches were diverse enough to allow building multidisciplinary working groups during the workshops and feed the debates and discussions following the talks. It is important to underline that many of the participants had a multidisciplinary, if not interdisciplinary background or working environment.

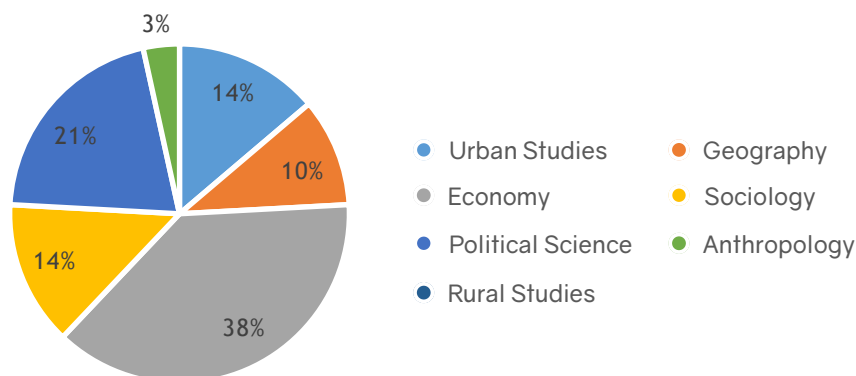


Figure 6 – Distribution of the Early-Stage Researchers' disciplines at the SHAPE ENERGY 'Advancing Energy Policy' Summer School

2.3.2. Main areas and topics

The ESRs were asked to use key words to describe their research, as part of the summer school registration process; no example keywords or prompts were provided to bias the responses here. 'Renewable energy' was the most frequently used (27%), followed by 'electricity' (15%), 'low-carbon' (15%) and 'sustainable development' (13%). 'Process industries' (4%) was the least studied (Figure 7).

¹¹ See [Appendix 5](#) for a more detailed presentation.

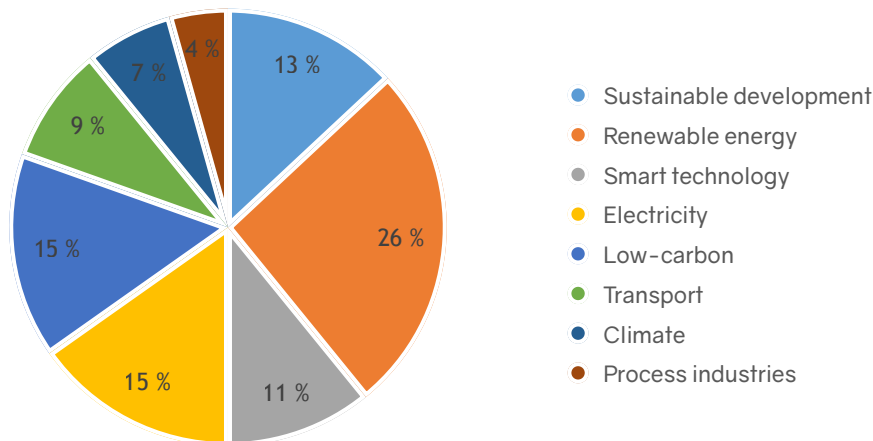


Figure 7 – Distribution of key words used to describe the Early-Stage Researchers' topic

When looking at the topics, the ESRs' research could be divided into five main groups, deduced from the key words they provided to describe their research topic¹²:

- Transition studies,
- Renewable and conflicting energy resources,
- Consumption and consumer protection,
- New technologies,
- Policy-making.

It is interesting to note that most topics are gendered (Figure 8). Policy-making was mostly represented by male ESRs, while the topics of 'new technologies' and 'renewable and conflicting energy sources' were exclusively female. Although the group was too small to draw any significant conclusions, this gendered differentiation is worth noting. The bibliographical analysis done by Martin Anfinssen and Sara Heidenreich¹³ for SHAPE ENERGY about energy and gender has shown that there is a severe lack of more strenuous empirical explorations of the effects and implications of gender imbalance, and gendered stereotypes and assumptions within the research currently produced. They recommend that projects should take into account not only gender balance, but also employ gender-reflexive research. This feminisation of the researchers might be a way, but the fact that some topics appeared gendered will not necessarily imply a questioning of the gendered assumptions and stereotypes that their work may build on, and how this might affect the results produced.

¹² See Appendix 5 for a full presentation of their research topics.

¹³ See https://shapeenergy.eu/wpcontent/uploads/2017/07/SHAPEENERGY_ThemeReports_ENERGY-GENDER.pdf

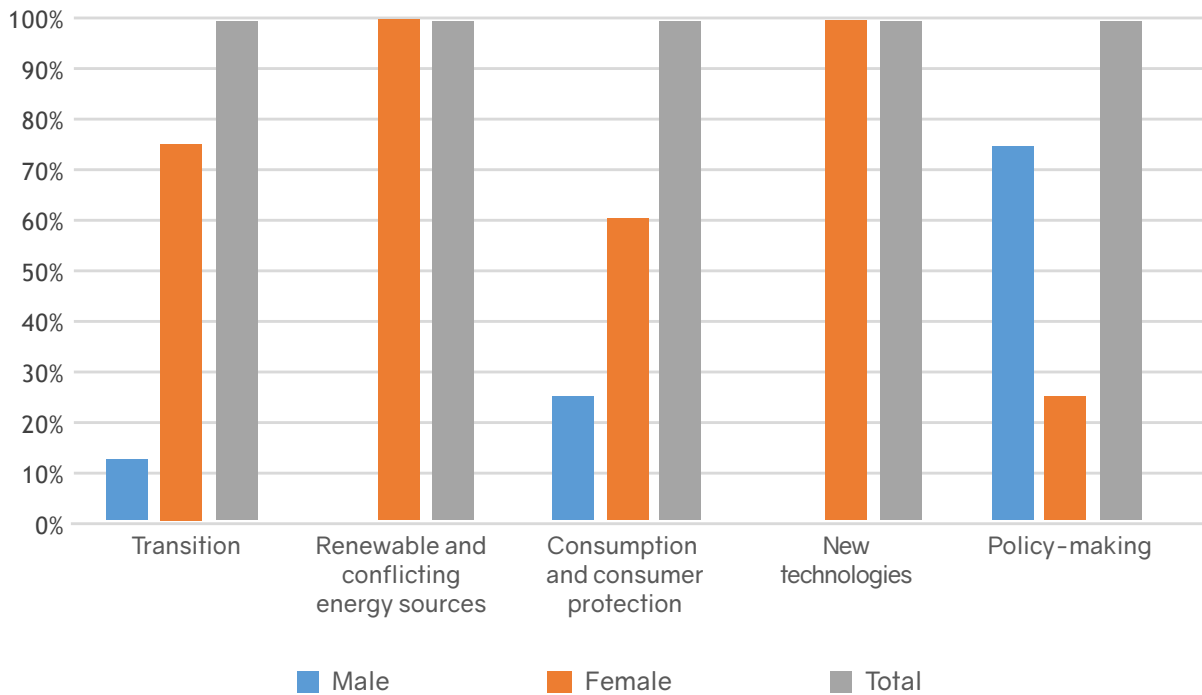


Figure 8 – Gender and thematic balance of the Early-Stage Researchers attending the SHAPE ENERGY 'Advancing Energy Policy' Summer School

2.3.3. Early-Stage Researchers' fieldwork locations

Figures 9 and 10 show the diversity of geographical areas studied. Depending on the disciplines, the case studies aim to understand the cultural and social specificities at a micro-level; while research at a macro-level mostly aims to understand the impact of European and international public policies.

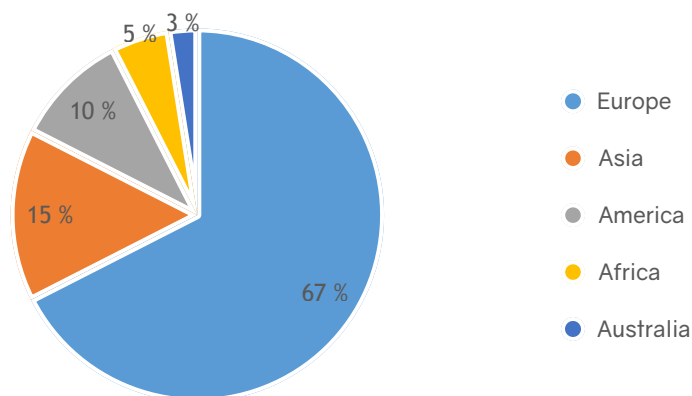


Figure 9 – Distribution of the field work locations of Early-Stage Researchers attending the SHAPE ENERGY 'Advancing Energy Policy' Summer School

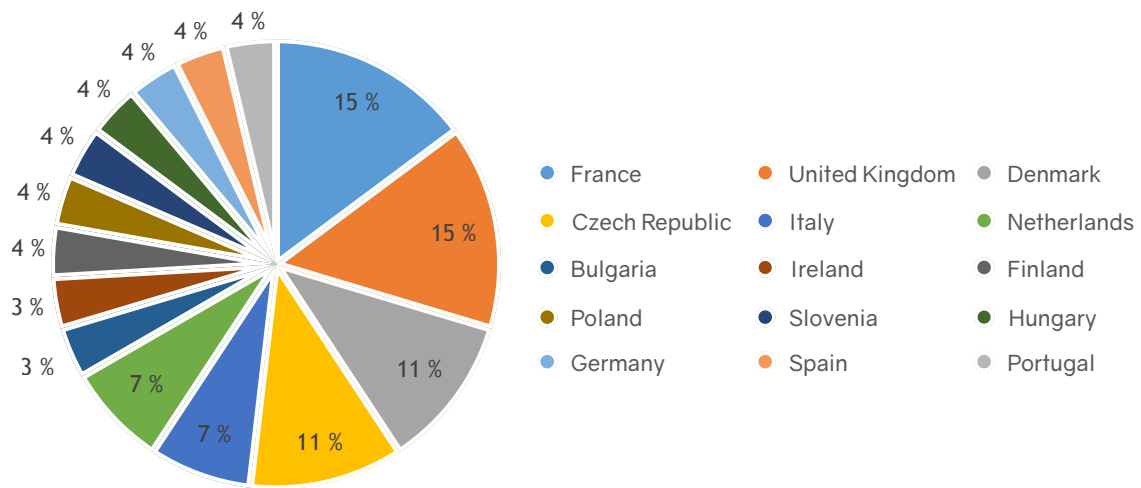


Figure 10 – Distribution of the field work locations in Europe of the Early-Stage Researchers attending the SHAPE ENERGY 'Advancing Energy Policy' Summer School

3. The interactions

Throughout the summer school, Delphine Burguet, Pauline Claudot and Nathalie Ortar undertook participant observation of the interactions that happened during the workshops and the discussions following plenaries. Participant observation also took place during some informal times: breaks, at lunchtime and at some of the events that took place in the evening. This section of the report details some of those interactions and presents, firstly, the way in which ESRs participated in the summer school; and secondly, details some of the interdisciplinary issues that appeared during the workshops.

3.1. Participation

In this subsection, we present how the summer school was perceived and experienced, as well as an analysis of the participation detailed by gender, cultural background and type of interactions.

3.1.1. Content and conditions

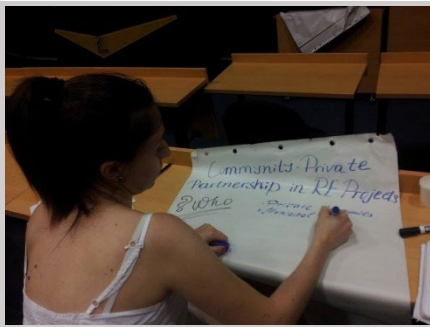
As mentioned above, the summer school offered a wide range of various activities divided into two main categories: plenary sessions and workshops. During the workshops, time was divided between work in small groups and general discussions during the presentation of the results of the work. The plenary sessions were more formal, with time dedicated to the presentation of a given subject and were followed by a discussion with the audience.



Small group during workshop 3 “Energy challenge” with Patrick Sumpf (convener)

Wednesday was dedicated to living labs. ESRs took part in an activity in which they were given the opportunity to experience an energy-related challenge and then reflect upon it by exchanging ideas with their group of peers, academics and practitioners.

Feedback and comments were provided both in person and in writing at the end of the summer school. Many of the ESRs appreciated the instructive and interesting nature of the summer school. An example of this is Sonia Amahed's feedback: “I just wanted to extend a heartfelt thank you for making the SHAPE Energy Summer School such a wonderful and rich learning experience!”.



An Early-Stage Researcher during workshop 5 “Energy citizenship” with Sara Heidenreich (convener)

The choice of topics and speakers was especially noted as well as the willingness to present each topic from a different disciplinary and/or theoretical point of view. Mariya Trifonova wrote: “I had an amazing opportunity to acquire new knowledge from different academic schools, to challenge my own perspective on the solutions offered to us by existing economic models to the complex issues that we face in the current energy transition.” The multidisciplinary of the summer school was experienced as an opportunity to open new perspectives. Cécile Forgue said “It allowed me once again to realise all that remains to be discovered for a European energy transition”.

The discussions from the sessions were deemed challenging and fruitful: “the memory of our fruitful discussions will influence my future academic work” (Mariya Trifonova) as well as the discussions

around the ESRs’ research work: “The opportunity to present own research and get the feedback from others was very much appreciated” (Viera Pechancová).

All participants found that it had been an exhausting week. The work programme was indeed intensive but the weather was also partly responsible, as the outside temperature was very high¹⁴ and air conditioning was not available everywhere¹⁵. The very lively nightlife experienced during that week was another factor of the general weariness.

3.1.2. Participation

As ESRs came from very different cultural backgrounds, not all were fluent in English and not all were comfortable with debating publicly. Moreover, even if all had a research topic which dealt with energy, the general knowledge on the subject varied from one scholar to another. Last but not least, not actively taking part in discussions was also due to various reasons: participants were sometimes not interested enough or were too weary to join a discussion. Conversations also took place during the informal times (e.g. lunchtimes, refreshment breaks, evenings); in fact, some preferred talking in a more informal way and/or without an audience.

A gender difference was, however, noticeable and most female ESRs spoke less than their male counterpart during the plenaries. The women who did not remain silent asked more focused questions and were more likely to be interrupted, whereas men tended to make statements and critical remarks or asked questions aimed at clarifying an issue, nuancing a statement or detailing an example. Age also played an important role during the interactions, especially during the first days. The older participants were mostly male, had professional expertise and came from Western European countries. They took the floor more often



Cocktail dinner on Monday 19th June in ENTPE with all Early-Stage Researchers and speakers



Early-Stage Researchers during workshop 5 “Energy citizenship” with Sara Heidenreich (convener)

¹⁴ There was a heatwave at that time in France, and the temperature went up to 38° Celsius.

¹⁵ Most activities took place in a large auditorium which was air-conditioned and thus comfortable. However, the living labs and a workshop partly took place in a classroom.



and spoke for longer than the other participants. However, as the week passed by – thanks to the many workshop activities and the social time spent together – some of the initial shyness disappeared and most ESRs felt more at ease to speak even during the plenaries.

3.1.3. Involvement and appraisal

The participation of the ESRs was quite important although, during the plenaries, a few participants gave the impression of attending the summer school only to get credentials and/or to benefit from contents directly related to their own research field. Plenary presentations were however most of the time appraised by the participants. Interestingly, those given by female speakers gave way to more polemical questions, if not contestations, than the talks given by male speakers. The questions in those were more factual, theoretical or bibliographical.

Group work tasks requiring active participation and involving the production of a result drew most interest from the ESRs. The two tasks regarding energy challenges – respectively (1) how to collaborate in an interdisciplinary manner to solve a reference problem and (2) how to define and encourage energy citizenship – were not only considered as positive and instructive by the ESRs, but were also fruitful in terms of outcomes and said a lot about interdisciplinary and collaborative working.

The ESRs who joined ‘the bike experiment’¹⁶, which was organised by a group of young researchers and was followed by presentations involving practitioners¹⁷ and researchers, enjoyed it. The experiment was divided into two different but complementary parts – a physical, sensitive and individual experience, taking place outside; and a more reflective time inviting people to share their feelings and thoughts; as well as to discuss the various issues raised by the exercise. While induced to use participant observation and to the ways of incorporating this in their own field of expertise, the ESRs were also introduced to transdisciplinary working. More precisely, two aspects of the living lab were especially appreciated by the ESRs:

- The presentation of a project linking biomechanical engineering and bike use¹⁸ introduced SSH researchers to Science, Technology, Engineering and Mathematics (STEM) disciplines, and made them aware of the relevance of both to their sets of disciplines and also of interdisciplinary collaboration;
- The presence of practitioners and the exchanges that followed their presentations helped the ESRs to better understand how academics could address the questions raised by policy-makers.

Finally, networking was a major point of interest for the ESRs and, on Thursday (day four of the five day programme), a Facebook group had been created by them to keep in touch and share relevant contents and information. It was mainly used during the summer school activities and especially for the talks. The group was only active¹⁹ for a short time.



Early Stage Researchers during the ‘Living lab - exchange with practitioners’ session

¹⁶ The living lab consisted of riding a bike through the city to reach a spot from a previous one via an itinerary selected from two possible pre-established ones: one only with cycle ways, a kind of ‘green lane’, and another through the ‘urban jungle’.

¹⁷ There was a start-up and the founder of an association.

¹⁸ By Dr. Laura Dubuis (Université Claude Bernard Lyon 1 / IFSTTAR, France).

¹⁹ The last publication is dated 6th July 2017 by a summer school organiser. The last content published by a participant is dated 28th June 2017.



3.2. Interdisciplinarity at stake

This subsection analyses how the vocabulary and concepts used (without being questioned) might have been a problem for the students not familiar with those issues; then, in the second and third parts, we discuss the interactions that took part during the 'Energy challenge' session from the morning of day 2; and, in the fourth part, we detail the interactions rendered visible during the workshop aiming at creating consistent socio-technological energy scenarios.

3.2.1. Vocabulary issues

Defining how words and concepts relating to energy are understood render visible the fact that they have a different meaning in various disciplinary and professional sectors, which is well explored and illustrated by SHAPE ENERGY²⁰. The importance of defining the vocabulary used also emerged during the summer school. Although all concepts had been defined by at least one speaker, this definition was not necessarily given by the first speaker who used it. Indeed, most of the speakers did not take into account the fact that they were facing a multidisciplinary non-native audience, which covered a wide variety of research interests. As the ESRs came from very different academic horizons and worked on a wide variety of topics, they were not necessarily familiar with all terminology. Neologisms ('prosumers'), key political concepts ('empowerment', 'resilience'), or sociological concepts born in certain contexts ('vulnerability') were often taken-for-granted and used without being investigated, or at least documented, before the dedicated speaker came and, in the case of those concepts, definitions were only given on Thursday and Friday. As well, notions such as 'public' (to distinguish from 'people', for example) or others that have a different meaning across disciplines were not collectively discussed and defined, which was also a problem as they circulated among participants without being questioned, so that an unconscious but operational, functional misunderstanding prevailed. On one hand, it surely enabled people to talk and push discussions forward. On the other hand, in doing so, not only did these definitions neglect some thorny topics and burning issues related to energy but they also avoided connecting energy challenges to other debates (e.g. 'resilience' is a psychological concept defined as the ability to go beyond a traumatism and even to make the better out of it; 'vulnerability' is a key concept of a sociological approach born at the end of the Cold War and that is aware of the double²¹ dimension of technology). It is worth noting that the presentations that placed a greater emphasis on vocabulary and language²² were both welcomed and vividly discussed by the ESRs.

3.2.2. From specialisation to simplification

During the energy research challenge, the ESRs were divided into three groups and had to design a study. Two of the groups were composed of ESRs coming from various disciplinary backgrounds, while the third group was mostly composed of ESRs working in Economics or in economics-related fields²³. When the various groups started to design the research, each of them deliberately reduced the complexity of the challenge by summing it up in simple questions:

- What is the problem?
- How can it be solved?
- Who is concerned by this problem?
- Two of the groups also asked the question: why do people act the way they act?

20 See https://shapeenergy.eu/wp-content/uploads/2017/07/SHAPE_ENERGY_LEXICON.pdf

21 Technology is similar to a pharmakon: healing, helping when correctly dosed, toxic if not.

22 E.g. Aurèlia Mañé-Estrada distinguishing between 'citizen' and 'customer', or Ute Dubois analysing the concept of energy precariousness and poverty.

23 In this workshop, a lot of attention was given to multidisciplinary. However, some of the ESRs majoring in two disciplines had not declared that their field of expertise was also Economics.

This last question was not asked by the group composed of ESR Economists. The ESRs acknowledged having taken the individual's behaviour for granted and only applied the rational choice theory and cost-benefit analysis, theories that tend to prevail in mainstream Economics.

It is worth noting that none of the groups raised some other crucial, yet simple, questions of the 'when?' and 'where?'. The SHAPE ENERGY summer school dealt with the current European energy landscape on one hand, and aimed to advance European energy policies for the future on the other. During the first morning, Dr. Gerd Schönwälder (Policy Officer, European Commission) presented the EU's agenda for the next Horizon 2020 energy research programme, and Michael Bradshaw presented about global energy dilemmas. However, the ESRs' very specialised research fields and topics often prevented them from agreeing on what is at stake when it comes to broader issues and from problematising it in a more nuanced and inclusive manner. Indeed, the space-time localism of the literature they were referring to and the fieldwork they based their assumptions on and, for some of them, their energy-related professional experiences, often meant a lack of a general knowledge and global perspectives surrounding – and influencing – their area of expertise.

In addition to the limits inherent to the specialisation – which involves not only disciplinary constraints but also thematic and time-space delimitations that characterises contemporary research – professional experiences, personal values, socioeconomic determinants and individual day-to-day life and habits of participants influenced the way they interacted with other ESRs as well as how they understood and analysed the challenge they had to solve.

3.2.3. Disciplinary approach as methodological discrimination

If interdisciplinarity was only one of the core issues at stake during the workshops, it played a key role in the way the problems were tackled. During the plenary session that took place at the end of the energy challenge, the gap between (1) a mainly pragmatic approach presented by one group mostly composed of Economics ESRs and (2) a rather social and political one, focusing on both individual and collective interests as well as values defended by the two other groups, became obvious. There was no ontological judgement about what the world is or should be in any of them, but about a methodological prioritisation which depended on the disciplinary backgrounds of the participants. Indeed, this gap doesn't mean that the Economics-focused group had not thought about social and political issues or that the other groups had produced idealistic, unrealistic views putting aside economic facts, rules and constraints. It only means that at some point each group had collectively decided to focus on some problems and prioritised some of the goals that seemed most important to them. This type of prioritisation process is ordinarily silent since methodology and disciplinary paradigms are deeply interiorised and thus part of an unconscious disciplinary discrimination. These processes were rendered visible because, while engaged in discussing a common issue, the different disciplinary 'implicit' had to be rendered explicit in order to be discussed.



Early-Stage Researchers during workshop 3 "Energy challenge" with Patrick Sumpf (convener)

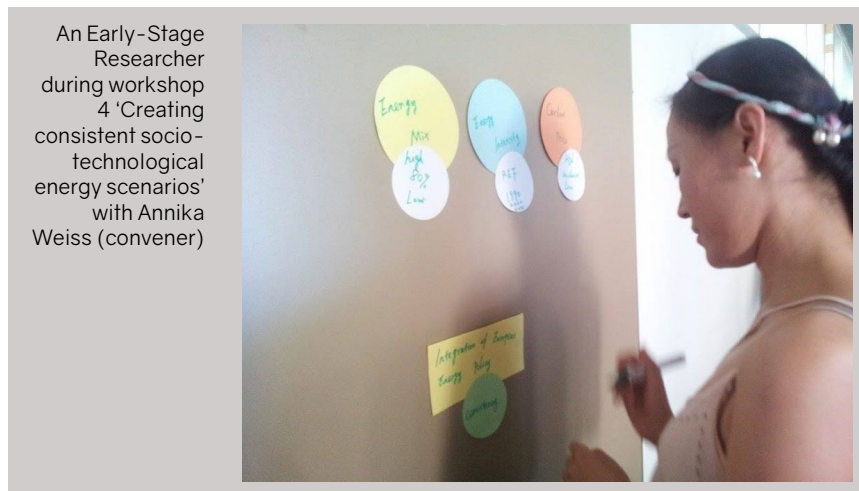
This example illustrates the radicalism that prevails when it comes to a complex issue of collective interest, such as energy transition: to take into account the economic issues is so embedded into the way we are used to explain the economic and social situation of the world, that it is either internalised without being questioned or is denounced and disqualified as an ideological pattern. This domination of economic thinking became even more obvious during the scenario-building workshop.

3.2.4. Unequal power

Despite the aim of helping the ESRs to question their scientific practices and collaboration, competition and conformity were dominant. Between the ESRs there was some process of domination that undermined the collaborations. This became especially visible during the workshop aiming at creating consistent socio-technological energy scenarios.

During the workshop, attention was quite fickle due to tiredness and the very high temperature inside the small venue.

The ESRs were separated into five groups. Each group had to determine influencing factors (so-called descriptors) of the energy transition. The top five descriptors were chosen by all ESRs by distributing glue dots. In small teams, the ESRs then evaluated the interdependencies of the descriptors in a semi-quantitative way (i.e. by judging, supporting or inhibiting influence with positive or negative integer numbers). All tasks had to be accomplished in a given time. This precise time-frame forced the ESRs to agree not only about the content of the statements that had to be made but also on the strength of the interdependencies, which raised questions about 'qualitative means'.



An Early-Stage Researcher during workshop 4 'Creating consistent socio-technological energy scenarios' with Annika Weiss (convener)



The factors influencing energy transition at workshop 4 'Creating consistent socio-technological energy scenarios' with Annika Weiss (convener)

Indeed, depending on the group composition (disciplinary, age and gender ratio as well as the balance between result-oriented personalities and understanding-driven ones), the groups either tended to reach a collective consensus or were ultimately led by one or two ESRs making the others – whether tired or convinced – converge towards their own views. Three factors influenced these leaderships: (1) their personality and professional experience, (2) their disciplinary background and (3) the language issue.

The 'leaders' were results-oriented and recognition-driven. Most of them were male, young competitive ESRs, mostly economists, and ESRs with a professional background in other contexts than academia. Whereas the former did not bear the idea they could be 'outdone' by rival groups, the latter tended to act as if they were still in a competitive environment and had to be productive.

The disciplinary background also deeply influenced the outcome of the group works. The disciplines emerged as being driven by two major sets of paradigms that appeared antagonistic. On one side were the ESRs trained to question premises, doubt and suspend their judgement, while on the other side stood

ESRs who were used to producing more decontextualised statements, abstractions, visible or quantifiable indicators.

The ESRs who were used to factual, objectifying literacy, understood the cross impact matrix workshop better than those interested in interpreting and understanding subjective realities, social determinants or multiple ontologies.

Poor knowledge of English was also a handicap. Participants whose English level was not advanced enough could barely join the discussions and tell their views, much less impose them. Given the fact that time was restricted, the ESRs limited their participation to their comfort zones and censored themselves.

A side effect of the monolingualism imposed to a group mostly composed of no native English speakers – combined with the prevailing Economics lexicon – consisted in a kind of poverty in language, in the repetition and circulation of the same words or phrases progressively circumscribing complex energy-related issues into several, but limited topics, mechanically perceived and presented as the main or key ones.



Example of the interactive work of Early-Stage Researchers during workshop 4 "Creating consistent socio-technological energy scenarios" with Annika Weiss (convener)

The result of that workshop was therefore interesting as the economy (re)framed many of the discussions. The solutions that were proposed were mostly promoting technical answers in order to sustain economic goals. In this very case, what was interesting was the absence of consideration in the creation of scenarios of the role of citizens as well as that of the consumers. Neither took into account the political choices that these scenarios implied regardless of the discipline of the students. As observers, we found it very interesting how economic goals and the assumption that economics should frame future scenarios are obviously so embedded that even academics from other domains did not reconsider this proposition, as they stated when asked at the end of the workshop. What is more is that the exercise made visible how the general assumption that Economics should be a priority, reframes the capacity of other disciplines to question society. As with most processes of domination, it is embodied and often unspoken. The students realised what they had done and its implications, only once the present researchers pointed to it during the discussion that followed the workshop, to establish the advantages and disadvantages of the method.



4. Conclusion: Obvious blind spots

From analysing the outputs of the summer school, it is clear that despite its success, greater attention could have been paid to certain considerations in order to make interdisciplinarity 'work' better. In particular, we now conclude with four recommendations, which could serve as points of reflection for organising (any future...) any future ESR and/or interdisciplinary SHAPE ENERGY activities.

1. Make more explicit/visible the 'implicits' of the various disciplines and, while proposing a workshop, better consider the time needed by each discipline to produce a 'rigorous' outcome/output. A more disciplinary-rooted and systematic approach²⁴ of energy-related descriptive and normative discourses could have been more explicit and efficient to set the base of interdisciplinary working.
2. Pay attention to the fact that mainstream economic thinking innervates all disciplines. This element should be taken into greater consideration in prospective research, as it influences the way the future is envisioned and closes alternative paths that could have been taken.
3. Better consider the cultural background of the participants when asking them to work together, or at least make more explicit the rules of the exercise as well as the cultural implicit behind it.
4. Be sensitive to the gender and age of the participants, as these obviously play a role in how individuals express and put themselves forward. As it is crucial to devote time and resources, and to employ experts when implementing gender perspectives in research programmes and policy-making, more attention should be paid to this point as well as to how older researchers might influence the youngest.

24 By a socio-linguist, for instance.



5. Acknowledgements

Our sincere thanks to Dr. Matthieu Adam, Dr. Maël Meralli-Ballou, Romain Sauzet and Maimouna N'Dong-Etroit for organising the bike experiment, to Dr. Sara Heidenreich, Thomas Kern-Gillard, Prof. Patrizia Lombardi, and Prof. Aurèlia Mañé-Estrada and Patrick Sumpf for their suggestions and help before and during the summer school; and to Lenke Balint for her helpful comments and careful reading. We are also grateful to ENTPE for letting us use their various facilities.

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6. Appendices

6.1. Appendix 1 – Inter-, multi-, transdisciplinarity definitions

Interdisciplinarity involves the combining of two or more academic disciplines into one activity (e.g. a research project). It is about creating something new by thinking across boundaries. It is related to an interdiscipline or an interdisciplinary field, which is an organisational unit that crosses traditional boundaries between academic disciplines or schools of thought, as new needs and professions emerge. Large engineering teams are usually interdisciplinary, as a power station or mobile phone or other project requires the melding of several specialties. However, the term “interdisciplinary” is sometimes confined to academic settings.

Multidisciplinarity is about combining or involving several academic disciplines or professional specialisations in an approach to a topic or problem. A multidisciplinary approach involves drawing appropriately from multiple academic disciplines to redefine problems outside normal boundaries and reach solutions based on a new understanding of complex situations. One widely used application of this approach is in health care, where people are often looked after by a multidisciplinary team that aims to address their complex clinical and nursing needs.

Transdisciplinarity implies a research strategy that crosses many disciplinary boundaries to create a holistic approach. It applies to research efforts focused on problems that cross the boundaries of two or more disciplines, such as research on effective information systems for biomedical research, and can refer to concepts or methods that were originally developed by one discipline, but are now used by several others, such as ethnography, a field research method originally developed in anthropology but now widely used by other disciplines.



6.2. Appendix 2 – Summer school programme

Monday 19th June

- 9h:** Registration and coffee
- 9h30:** Project presentation ‘Introducing SHAPE ENERGY: The importance of energy-related social sciences and humanities’
Speaker: Dr. Chris Foulds (Anglia Ruskin University)
- 10h15:** Talk ‘Social Sciences and Humanities within Horizon 2020: meeting European energy challenges’
Speaker: Dr. Gerd Schönwälder (European Commission)
- 11h:** Workshop 1
Call for evidence
- 11h30:** Talk ‘Global Energy Dilemmas’
Speaker: Prof. Michael Bradshaw (Warwick Business School)
Videoconference
- 12h30:** lunch break
- 13h45:** Workshop 2
Young researchers presentations
Convener: Dr. Nathalie Ortar (LAET/ENTPE-University of Lyon)
Chairs: Dr. Chris Foulds / Dr. Sara Heidenreich / Patrick Sumpf
- 15h45:** break
- 16h:** Workshop 2
Young researchers presentations
- 18h:** Welcome address by Dr. Luc Delattre (Head of Research Department, ENTPE- University of Lyon)
Cocktail

Tuesday 20th June

- 9h:** Workshop 3
Energy challenge
Convener: Patrick Sumpf (Karlsruhe Institute of Technology)
- 10h45:** coffee break
- 11h:** Project presentation ‘Developing, testing and assessing options for cross-cultural transformation of energy use in households’
Speaker: Dr. Gary Goggins (National University of Ireland)
- 12h00:** lunch break
- 13h30:** Talk ‘Thinking the energy transition from the point of view of the political economy’
Speaker: Prof. Aurèlia Mañé-Estrada (University of Barcelona)



15h30: **Talk 'From story-telling to future scenarios of socio-energy assemblage in cities'**
Speaker: Dr. Gilles Debizet (PACTE/Grenoble Alpes University)

Evening: visit of Lyon

Wednesday 21st June

Living labs

1. Bike experiment with practitioners and researchers organised by IMUalpha
2. Energy experiment organised by Dr. Mohamed El Mankibi (ENTPE-University of Lyon)

Evening: Music festival

Thursday 22nd June

9h: **Talk 'Health and energy poverty'**
Speaker: Prof. Ute Dubois (International Business School, Paris)

10h15: coffee break

10h30: **Talk 'Path-dependencies in the energy sector and their relationship to energy poverty'**
Speaker: Prof. Stefan Bouzarovsky (University of Manchester)

12h: lunch break

13h30: **Workshop 4**
Creating consistent socio-technological energy scenarios
Convener: Dr. Annika Weiss (Karlsruhe Institute of Technology)

Friday 23rd June

9h00: **Talk 'From social practices to energy consumption'**
Speaker: Dr. Nathalie Ortar (LAET/ENTPE/CNRS/University of Lyon)

10h: coffee break

10h15: **Workshop 5**
Energy citizenship
Convener: Dr. Sara Heidenreich (Norwegian University of Science and Technology)

12h: Lunch break

13h30: **Talk 'Public acceptability of energy sources, systems, and policies'**
Speaker: Dr. Goda Perlaviciute (University of Groningen)



6.3. Appendix 3 – Energy challenge design workshop

Please choose ONE discipline /field of study that you think you represent the most, or add below if your discipline/field of study is not mentioned:

- | | |
|---|---|
| <input type="checkbox"/> Business | <input type="checkbox"/> Planning (architecture) |
| <input type="checkbox"/> Communication studies | <input type="checkbox"/> Politics |
| <input type="checkbox"/> Criminology | <input type="checkbox"/> Psychology |
| <input type="checkbox"/> Demography | <input type="checkbox"/> Science & technology studies |
| <input type="checkbox"/> Development | <input type="checkbox"/> Sociology |
| <input type="checkbox"/> Economics | <input type="checkbox"/> Social anthropology |
| <input type="checkbox"/> Environmental (social) science | <input type="checkbox"/> Social innovation |
| <input type="checkbox"/> Education | <input type="checkbox"/> Social policy |
| <input type="checkbox"/> Gender | <input type="checkbox"/> Theology |
| <input type="checkbox"/> History | |
| <input type="checkbox"/> Human geography | |
| <input type="checkbox"/> Law | |
| <input type="checkbox"/> Linguistics/languages | |
| <input type="checkbox"/> Philosophy | |

Challenge A:

It is argued by most STEM and energy-SSH scholars that future energy systems will increase in complexity, due to larger degrees of decentralization and the growing number of actors and technical components in the grid. Against this background, it will be a challenge for system operators and supervisors in numerous fields to remain in control of what happens in the system, i.e. control of technical processes (safety, security of supply, load management etc.) as well as social processes (e.g. control of market developments, control of electricity prices, control of smart grid data etc.). From your (disciplinary) point of view, how would you approach the (research or real-world) problem of control in future energy systems? What theories or methods would you apply to research resp. act upon this problem?

Objectives for group discussions

1. Do you agree with the scenario/reference problem sketched out here? Why/why not? What would you replace it with if not? Can you identify, after discussions in your group, a common reference problem that everyone can agree to/share in case the one provided is not convincing?
2. Once you have a (rather abstract) reference problem, please try to broadly sketch out, from your disciplinary point of view, how you would go about and research this issue? Let's assume you have the possibility to conduct a five year study with several full-time researchers and sufficient funds to perform field work, experiments, modelling, etc. – what would you do? Please provide the rough outline of a proposal (1-page bullet points max. or a few pp slides only). Prepare to present this in a short talk (~5min) to the audience.



Challenge B:

In the past, the energy system was said to be existing only 'behind the power outlet'. The consumer was usually not considered an active part of the system, but rather the receptor of a service, or the 'end-user'. This pattern is currently, and more so in the future, under transition along energy system innovation. 'Prosumers' and 'energy citizens' are desired as roles for average consumers, helping the grid's stability as demand-side management resources due to intermittent RES, as well as creating new business opportunities for consumers and European economies. The underlying prerogative for this kind of development clearly is the mobilization of action capacity (i.e. the ability to act in the face of uncertainty) among private and commercial consumers, who are also expected to more actively participate in load shifting operations to make the 'smart grid' work. From your (disciplinary) point of view, how would you approach the (research or real-world) problem of action capacity in future energy systems? What theories or methods would you apply to research resp. act upon this problem?

Objectives for group discussions

1. Do you agree with the scenario/reference problem sketched out here? Why/why not? What would you replace it with if not? Can you identify, after discussions in your group, a common reference problem that everyone can agree to/share in case the one provided is not convincing?
2. Once you have a (rather abstract) reference problem, please try to broadly sketch out, from your disciplinary point of view, how you would go about and research this issue? Let's assume you have the possibility to conduct a five-year study with several full-time researchers and sufficient funds to perform field work, experiments, modelling, etc. – what would you do? Please provide the rough outline of a proposal (1-page bullet points max. or a few pp slides only). Prepare to present this in a short talk (~5min) to the audience.



6.4. Appendix 4 – Summer school speakers' biographies

Michael Bradshaw

Professor, University of Warwick, United Kingdom

Michael Bradshaw is Professor of Global Energy at Warwick Business School at the University of Warwick. His research focuses on the interface between economic and political geography, energy studies, and international relations. He is a Fellow of the Royal Geographical Society, where he formerly served as Vice President, and a Fellow of the Academy of Social Sciences. He holds an MA from the University of Calgary in Alberta and a PhD from the University of British Columbia.

Stefan Bouzarovski

Professor, University of Manchester, United Kingdom

Stefan Bouzarovski is Professor of Geography and Director of the Centre for Urban Energy and Resilience at the University of Manchester. His professional activities are situated at the intersection of two broad thematic areas: energy and cities. Within these domains, he is best known for his path-breaking research on the driving forces and spatial patterns of domestic energy deprivation, focusing on European countries in particular. Some of this work is summarized in the monograph *Energy Poverty in Eastern Europe* (Ashgate, 2007) and the European Research Council - funded EVALUATE project which he currently leads. He has also been exploring the relationship between household everyday practices and residential change in inner-city areas - the subject of his monograph on *Retrofitting the City* (IB Tauris, 2016).

Gilles Debizet

Lecturer, Grenoble Alpes University, France

Gilles Debizet is lecturer and researcher at the Grenoble Alpes University in France. His researches concern urban sustainable policies especially the knowledge transfers between project, local and national scales. After transport and building, he currently works on environmental/energy planning and on energy transition. His research themes are climate and energy transition; Territorialized learning and diffusion of expertise; Implementation of local climate policies and Environmental management of projects.

Ute Dubois

Professor, ISG International Business School, Paris, France

Ute Dubois is professor of economics at ISG International Business School in Paris. She holds a PhD in economics from University Paris Sud (2007). Her current research focuses on public policies addressing social issues related to energy consumption, especially fuel poverty policies. She has also worked on energy economics and policy, especially energy market liberalisation, market design, competition policies, organisational changes in distribution and supply and effects of energy market liberalisation on small consumers.

Chris Foulds

Senior Research Fellow, Anglia Ruskin University, Cambridge, United Kingdom

Chris Foulds is an interdisciplinary environmental social scientist, with a keen interest in how people (households or professionals) respond to interventions that target reductions in how much they consume. His current research interests tend to centre around the following four interrelated themes: Energy and built environment; Sustainable consumption and socio-technical change; Interdisciplinary and theoretically informed methods; The role of the researcher.

Mohamed El Mankibi

Research Director, University of Lyon, ENTPE/LTDS, France

Mohammed El Mankibi is a Research Director at ENTPE-LTDS-University of Lyon, he is also the head of Building program of ENTPE-University of Lyon and qualified by the French ministry of environment, energy and sea as international expert.

Gary Goggins

National University of Ireland, Galway, Ireland

Gary Goggins is a project manager with the ENERGISE 'European Network for Research, Good Practice and Innovation for Sustainable Energy' project. His main research interests are in relation to sustainable



consumption and individual and socio-material influences on consumption patterns. He is also concerned with how knowledge is communicated with policy makers, civil society and industry.

Sara Heidenreich

Research Fellow, Norwegian University of Science and Technology, Trondheim, Norway

Sara Heidenreich defended her PhD thesis in October 2014 at the Department of Interdisciplinary Studies of Culture. Her thesis "Blowing in the wind: The socialization offshore wind technology" deals with the socialization of the emerging offshore wind technology in Norway. In particular, it focuses on two potential agents of socialization, news media and scientists.

Aurèlia Mañé-Estrada

Professor, University of Barcelona, Spain

Aurèlia Mañé-Estrada holds a PhD degree in Economic and Business Sciences from the University of Barcelona (UB) and a Master's Degree in International Relations from the Autonomous University of Barcelona (UAB). Currently a professor at the UB, where she teaches subjects related to economic policy and international energy systems and relations, she is also a visiting professor of the Master's degree in Contemporary Arab Studies at the Autonomous University of Madrid (UAM), and has been a lecturer at the University of Denver (Colorado, USA). As an expert on energy and related matters, she is a member of the geopolitics and energy security group of the Elcano Royal Institute of International Studies, is the creator and director of Casa Asia's Central Asia Observatory, a consultant on energy issues for Casa Asia, and a member of the university of Barcelona Economic Transition Analysis Group (GATE, UB) and of the Contemporary Arab and Muslim Societies Study Group (GRESAM, UCLM).

Nathalie Ortar

Senior Research Fellow, University of Lyon, ENTPE/LAET, France

Nathalie Ortar has a PhD in anthropology and is research fellow at the LAET (laboratoire aménagement économie des transports) since 2004, ENTPE, France. She has been Distinguished Visiting Scholar at San Jose State University (USA) in 2010-2011. Her research has mostly dealt with the place and role of dwelling in work trajectories as well as its role in family identity which is the subject of her habilitation defended in 2016. Since 2010, she is leading research on energy and discard studies.

Goda Perlaviciute

Assistant Professor, University of Groningen, Netherlands.

Goda Perlaviciute is assistant professor at the University of Groningen, in Netherlands. Her key research interests lie in public evaluations and acceptability of energy sources, systems and policies, and which factors influence these evaluations and acceptability judgements. She focus on theory development and applying theory in addressing acute environmental and energy problems.

Gerd Schönwälder

Doctor in Political Science, McGill University; Policy Officer - Strategy at European Commission, Belgium.

Gerd Schönwälder is conducting research on the role of the emerging countries in democracy promotion, and organizing a conference on 'Promoting Democracy: What Role for Emerging Powers?' Until December 2012, he was Director of Policy and Planning at the International Development Research Centre (IDRC). He formerly led IDRC's Peace, Conflict, and Development (PCD) program, which supported research on peacebuilding and conflict prevention in the developing world. Before joining IDRC, he was the Deputy Director of the Canadian Foundation for the Americas (FOCAL), an Ottawa-based think tank focusing on western hemispheric issues. He previously spent several years in Brussels as a European Union official, covering such aspects of the EU's external relations as development and economic co-operation, trade issues, and the enlargement of the European Union to the east. In addition to his position at CIPS, he is a visiting fellow at the German Development Institute (DIE/GDI) in Bonn, Germany. He holds a Ph.D. in political science from McGill University and has written on local government, social movements, and conflict issues. A Latin Americanist by training, he has had extensive exposure also to other parts of the developing world. His current research interests revolve around democratization, citizen participation, and the linkages between globalization and violent conflict.



Patrick Sumpf

Scientific Staff, Karlsruhe Institute of Technology (KIT), Germany. Patrick Sumpf is Research Associate at the Institute for Technology Assessment and Systems Analysis (ITAS), Karlsruhe Institute of Technology (KIT), in Germany. His research areas are “Trust & Risk in Energy Transitions”, “Socio-Technical Systems”, “Smart Grid”, “Big Data”, and “Interdisciplinary Studies”.

Annika Weiss

Scientific Staff, Karlsruhe Institute of Technology (KIT), Germany.
Annika Weiss works at the Institute for Technology Assessment and Systems Analysis (ITAS), Karlsruhe Institute of Technology (KIT), in Germany. She has a PhD (Dr.-Ing.) from the Institute IWAR, Darmstadt University of Technology, on energy balance of fuel production with microalgae. Her research areas are ‘Energy’, ‘Resources’, ‘Technologies’, and ‘Systems’.



6.5. Appendix 5 – List of summer school participants and their research interests

[Click here to read the abstracts of the ESRs PhD](#)

NAME	AFFILIATION	ABSTRACT TITLE	KEYWORDS
Aczel Miriam	Imperial College London	International regulation of shale gas: promoting public engagement, environmental and public health protection, and transparency	Shale gas; Hydraulic fracturing; Energy; Environmental risk; Public health: Regulation
Ahamed Sonya	University of Vermont	Farming, fracking, and renewable energy: water scarcity and the food-energy-water nexus in the Denver Region	Hydraulic fracking; Aquifer depletion; Sustainable cities, Renewable energy transition, Food, Energy, Water nexus
Arouna Diallo	Clermont Auvergne University	Energy poverty and sustainable development: the case of Côte d'Ivoire	Energy poverty; Energy services; Côte d'Ivoire; Electricity; Cooking fuels
Barthelmes Verena Marie	Polytechnic of Turin	Improving energy efficiency and environmental comfort in buildings through energy engagement and behavioural change programs	Occupant behaviour; Behavioural change; Energy engagement
Berry Audrey	EHESS	Carbon taxation: designing compensation measures to protect low-income households	Carbon tax; Distributional impacts; Fuel poverty; Measurement; Revenue recycling
Cantoni Roberto	Sciences Po, Paris	Future brokers: a diachronic study of the energy promise in France	Shale gas; Nuclear energy; France; Discourses
Cottafava Dario	University of Turin	Sustainability and human behaviour through social network	Social network; Behavioural change; Socio-technical system; Energy
Forgue Cécile	CITERES, CNRS	Calculation of solar irradiation on building's vertical facades considering urban morphology	Solar irradiation; Statistics; Urban morphology; Facades; Shade; Mask Effect; Dynamic; GIS; Matlab; R, Model; System
Escalante Nayeli	University of York	Transitions pathways to a sustainable low-carbon economy	Energy transitions; Low carbon economy; Political economy, Socio-technical transitions; Economy
Eitan Avri	The Hebrew University of Jerusalem	Partnerships between local communities and the private sector in renewable energy projects	Renewable energy. Sustainable energy. Partnerships. Local communities. Community energy
Johnston Barry	Business School of The University of Manchester	Transition management, carbon governance, lock-in and lock-out in the context of district heating in the UK and the Netherlands	Transition Management. Decarbonisation. UK. Netherlands



Trifonova Mariya	University of Sofia St. Kliment Ohridski	The role of the institutions for the development of the renewable energy sector in selected European countries	Renewable energy industry; Institutions; Energy Transition; European Energy Union
Mininni Giulia	Keele University	Can energy empower women? A case study from the Barefoot College in rural Rajasthan.	Renewable energy technology; Gender; women's empowerment; Education; Sustainable development
Ocinneide Alex	Trinity College Dublin	Incentives and efficacy: an evaluation of renewable energy policies in Europe 1995-2015	Energy Transitions; Energy policy; Renewable Energy; Europe; Renewable Energy Investment; Climate Finance; political economy
Onenli Ozge	Middle East Technical University/Engie Turkey	Emission Reductions and Future of Energy Policies in Turkey. Are renewables an alternative?	Future energies; Low CO2; Climate change; Renewables; Nuclear
Pechancova Viera	Tomas Bata University in Zlin	Regional scheme of sustainable energy management	Renewable energy sources; Sustainable energy management; Regional energy
Qiu Chen	Center for Development Research, Bonn, Germany	Biomass energy economics and rural livelihoods in Sichuan, China	Biomass energy; Rural livelihoods; Agricultural production; Choice behaviors; Labor allocation
Safian Fanni	Eötvös Loránd University	The possibilities of sustainable energy management in Hungary - Modelling energy visions with EnergyPLAN software	Sustainable energy; Energy scenarios; Energy modelling; EnergyPLAN; Social benefits
Francesco Sassi	University of Pisa	The Challenge of Energy Security: China, Russia and the Central Asian Issue	Energy security; Asian energy security; Energy diplomacy; Central Asia; Russian federation; People's Republic of China; International relations; East Asia; Fossil fuels
Singh Mahendra	Institut polytechnique de Grenoble	Improving building operational performance with reactive management embedding diagnosis capabilities	Smart buildings; Diagnosing; Building management; Energy; Anticipative management
Soto Reyes Inés	Georg-August-Universität Göttingen	Factors and processes shaping opposition to energy facilities siting	Public opposition; Social acceptance; Risk perception; Social trust; Environment; Electricity; Energy; Chile
Soroush Golnoush	Politecnico di Torino	Prosumers and Electricity Networks' Regulations	Smart grids; Prosumers; Tariff design; Electricity regulation
Toivanen Pasi	University of Tampere	Energy transition in the Nordic countries: The case of Finland	Energy transition; Nordic countries; Interests; Actors
Wokuri Pierre	Sciences Po Rennes	Community renewable energy projects in Europe. Denmark, France and United Kingdom in comparison	community energy, wind power, photovoltaic, cooperative, social economy, public policy
Xiao Mengzhu	Institute of Engineering Thermodynamics	Energy System Transition of Eastern Coastal Metropolitan Regions in China - A Scenario Study for the Year 2050	Energy policy, Energy transition, Decarbonisation, Metropolitan regions, Renewable Energy
Zharan Kateryna	TU Bergakademie Freiberg	Implementation of Renewable Energy into the Mining Industry	Mining industry; Renewable energy; Hybrid energy system; Carbon dioxide emissions; Optimised model



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