

Guest Editorial

Energy in Society: Energy Systems and Infrastructures in Society – Concluding Issue

This issue of *Science & Technology Studies* concludes our three-part special issue that collected articles on new international S&TS research on energy systems in society. Starting from a conference event in Helsinki in 2012, but developing its themes and topics significantly further, the three special issues have now debated and advanced understanding about various energy issues from different vantage points in a number of countries. With an underlying interest in sustainability, energy system transitions, and manifold path dependencies, the authors in the previous issues explored bioenergy and its lock-ins to centralized energy systems in the UK (Levidow et al., 2013), constructing expectations for solar technology at field-configuring events in Finland (Nissilä et al., 2014), and energy system innovations more generally in the UK (Winkel & Radcliffe, 2014) as well as Norway, Japan, and Germany (Fuchs, 2014). Other works drew attention on Finnish pilot projects about electric vehicles (Temmes et al., 2013), “smarter” electric energy grids in Denmark and Germany (Schick & Winthereik, 2013), and political articulations about carbon dioxide capture and storage technologies within the EU and the US (Gjefsen, 2013). A notable addition to these studies mainly of energy expertise and policymaking was a citizen and an end-user

perspective. With this in view, the papers in the collection investigated Finnish self-building courses for solar heat collectors as a source of “consumer empowerment” (Jalas et al., 2014) and placed governmental notions of energy security in different countries to the level of energy end-users (Parag, 2014). These diverse themes were drawn together in a broader analytic review of S&TS literature on infrastructures and energy systems published as the first special issue’s guest editorial (Silvast et al., 2013).

This third issue of the energy in society presents five further articles on the themes of energy system change, expert knowledge, and end-use perspectives. The issue opens up with an article by Arthur Jobert and Claire Le Renard, titled as “Framing Prototypes: The Fast Breeder Reactor in France (1950s–1990s)”. Their case is a study on a shift in nuclear power production from a research phase to an industrial phase. The paper examines the development of Fast Breeder Reactor technology (FBR) in France, from the 1950s to the early closure of the FBR Superphénix plant in Creys-Malville in 1997. The authors discuss how framing a reactor prototype as “industrial” is not only a matter of rhetoric; it may have an important impact on the trajectory of an innovation. If the innovators succeed in making their project a synonym for solving great current problems, their research will be supported. Jobert and Le Renard argue that in S&TS there is tendency to write history backwards and present technological and commercial

failures as predictable or even inevitable. They encourage putting oneself in the place of the actors of the studied project and tuning to their views in controversy.

The following, Vincent Ialenti's article, "Adjudicating Deep Time: Revisiting the United States' High-Level Nuclear Waste Repository Project at Yucca Mountain", continues with the theme of nuclear energy and its situating in a wider historical frame. Specifically, Ialenti ties together anthropological and S&TS themes about expertise and law in order to highlight techniques of risk governance in nuclear waste management of the notable nuclear waste repository in the US. Going further than a focus on national energy policies and unprecedented "modernization risks" in the context of nuclear, the author critically considers whether certain legal knowledge practices on nuclear issues stem in fact from times before the nation state. This provides timely input to the classical S&TS works concerning nuclear energy and national imaginaries, technopolitics, policymaking, and epistemology.

The third contribution is by Ana Delicado, Luís Junqueira, Susana Fonseca, Mónica Truninger, Luís Silva, Ana Horta, and Elisabete Figueiredo. Entitled "Not in Anyone's Backyard? Civil Society Attitudes towards Wind Power at the National and Local Levels in Portugal", the article juxtaposes policy and institutional frameworks and civil society attitudes to uncover how wind energy is currently expanding in Portugal and compares its issues to other countries. In so doing, analytical use is made of energy scholar Rolf Wüstenhagen's and colleagues (2007) tripartite model of the "social acceptance" of renewable energy: comprising "socio-political", "community", and "market" dimensions of technology acceptance. The results by Delicado and colleagues demonstrate how some acceptance can

shape technological systems even when other forms are absent. In this case, while the Portuguese public and environmental movements clearly lacked enthusiasm about wind power (the community dimension of acceptance by Wüstenhagen et al.), a national-level planning system and tariff mechanisms have still led to significant expansion of these energy generation systems (the socio-political and market dimensions by the same authors).

In the next article, "The Meanings of Practices for Energy Consumption – Comparison of Homes and Workplaces", Jenny Palm and Sarah Darby write about a transition to more sustainable everyday practices by moving to a study on buildings' energy use. They generate new knowledge on the variety of such practices by drawing on mixed methods as well as a multi-sited approach. Interviews, participant observations, and quantitative materials are all presented and compared with a view on passive housing in Sweden and a modern research building in the UK. The first case study shows how the residents managed to make their dwelling increasingly sustainable, given their own preparedness to it and supportive building designs. In the research building case, on the other hand, original design choices and the installed base of technologies preconfigured users and usages and significantly limited the more sustainable maneuvers that the building's users could carry out during their daily work.

The special issue closes with Antti Silvast's and Mikko Virtanen's article "Keeping Systems at Work: Electricity Infrastructure from Control Rooms to Household Practices". Inspired too by a multi-sited point of view and drawing on systems theory as an analytic vantage point, the authors make a comparative analysis of electricity, risks, and reliability in two infrastructure control rooms and households, highlighting

differing structuring temporalities, external constraints, and personal skillsets in the three field sites. Based on their results, the authors suggest that the two focal points of many recent S&TS work on energy – the brittleness of energy systems and their “flat” conceptualizations, on the one hand, and wider systemic, cultural, and societal dimensions of energy, on the other hand – should not necessarily be seen as each other’s alternatives or as contradictory perspectives.

The editors of these special issues would like to thank all the authors for their invaluable contributions, input, as well as their gentle considerations of the comments during the editing and the review processes. We extend our gratitude to the number of anonymous referees that took their time to provide constructive criticism and help us significantly better the theme numbers. Lastly, whereas the series on energy in society ends with this issue, the *Science & Technology Studies* journal is more than welcoming to your future submissions about energy systems, sustainability, and various other infrastructures issues. Please follow the home page sciencetechnologystudies.org to learn about further special issue calls and find instructions about submitting to open calls or a theme number. Please do not hesitate to contact the journal’s editors in charge if you wish to discuss the suitability of a manuscript and its readiness for peer review.

*With kind wishes,
The guest editors*

References

- Fuchs, G. (2014) ‘The Governance of Innovations in the Energy Sector: Between Adaptation and Exploration,’ *Science & Technology Studies* 27(1): 34-53.
- Gjefsen, M.D. (2013) ‘Carbon Cultures: Technology Planning for Energy and Climate in the US and EU,’ *Science & Technology Studies* 26(3): 63-81.
- Jalas, M., H. Kuusi & E. Heiskanen (2014) ‘Self-Building Courses of Solar Heat Collectors as Sources of Consumer Empowerment and Local Embedding of Sustainable Energy Technology,’ *Science & Technology Studies* 27(1): 76-96.
- Lavidow, L., T. Papaioannou & A. Borda-Rodriguez (2013) ‘Innovation Priorities for UK Bioenergy: Technological Expectations within Path Dependence,’ *Science & Technology Studies* 26(3): 14-36.
- Nissilä, H., T. Lempiälä & R. Lovio (2014) ‘Constructing Expectations for Solar Technology over Multiple Field-Configuring Events: A Narrative Perspective,’ *Science & Technology Studies* 27(1): 54-75.
- Parag, Y. (2014) ‘From Energy Security to the Security of Energy Services: Shortcomings of Traditional Supply-Oriented Approaches and the Contribution of a Socio-Technical and User-Oriented Perspectives,’ *Science & Technology Studies* 27(1): 97-108.
- Schick, L. & B. R. Winthereik (2013) ‘Innovating Relations – or Why Smart Grid is not too Complex for the Public,’ *Science & Technology Studies* 26(3): 82-102.
- Silvast, A., H. Hänninen & S. Hyysalo (2013) ‘Energy in Society: Energy Systems and Infrastructures in Society’ *Science & Technology Studies* 26(3): 3-13.

Temmes, A., R.-S. Räsänen, J. Rinkinen & R. Lovio (2013) 'The Emergence of Niche Protection through Policies: The Case of Electric Vehicles Field in Finland', *Science & Technology Studies* 26(3): 37-62.

Winkel, M. & J. Radcliffe (2014) 'The Rise of Accelerated Energy Innovation and its Implications for Sustainable Innovation Studies: A UK Perspective', *Science & Technology Studies* 27(1): 8-33.

Wüstenhagen, R., M. Wolsink & M. Burer (2007) 'Social Acceptance of Renewable Energy Innovation: An Introduction to the Concept', *Energy Policy* 35(5): 2683-91.

Guest Editors

Antti Silvast
PhD, Researcher
Department of Social Research
University of Helsinki
PO BOX 24, 00014 University of Helsinki
Finland
antti.silvast@iki.fi

Hannu Hänninen
D.Sc., Independent Researcher linked to
the Department of Management
Aalto University, School of Business
P.O. Box 21230, FI-00076 AALTO, Helsinki
Finland
hannu.i.hanninen@aalto.fi

Sampsa Hyysalo
Associate Professor
Department of Design
Aalto University School of Art, Design and
Architecture
Senior Researcher
Department of Management
Aalto University School of Business
P.O. Box 31000, FI-00076 AALTO, Helsinki
Finland
sampsa.hyysalo@aalto.fi