

Knowing energy demand without metrics (or, what do we need metrics for anyway?)

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In many areas of policy, it has long been claimed that ‘what’s measured is what matters’ (Bevan & Hood, 2006). Quantitative metrics are used to measure and capture energy consumption in research and policy on energy demand. Here we question claims made about the need for such metrics. In particular, we unpick the following three arguments regarding the utility of quantitative metrics:

- 1) Energy is invisible and therefore we need metrics to render it visible;
- 2) We need metrics to know current levels of energy use as a basis for action;
- 3) Policy-making requires metrics to justify and legitimate strategies and policies.

We respond to these assumptions with provocative and somewhat polemical arguments with the aim of generating new ways of thinking about energy demand.

Provocation 1. Energy is not invisible: we know when we’re using energy

Energy metrics such as million tonnes of oil equivalent, litres of fuel, or kilowatt hours of electricity or gas (e.g. DECC, 2012: 8, 9; Shove, 2017) are used and understood as a means of making energy consumption tangible, material, and real. This is the basic assumption on which behavioural interventions such as feedback, metering and monitoring displays etc. are founded (Burchell, Rettie, & Roberts, 2016). The prevailing wisdom is that metrics make invisible energy visible and that without them we would not and could not know energy consumption. This is, of course, a fallacy. Energy *consumption* is never invisible; it is an ever-present element of most, if not all, human activity. We use and experience energy in everyday encounters with other people, with our material surroundings, and through what we do. We know when we consume energy to keep warm, light our homes, or travel to work. We also know when we are ‘wasting’ energy, when, for instance, we leave the heating on overnight or the fridge door open, even if our understandings of the technical details of consumption are shaky (Kempton, 1986). Quantifying consumption in no way makes it more visible, it only tells us something we already know but in a different form. In short, we do not need metrics to make the invisible visible, because energy consumption is not invisible at all.

Provocation 2. Energy demand metrics don’t offer good a basis for action

The available metrics relating to energy demand are poor: they measure what energy is being consumed (metering), what is modelled as being needed (fuel poverty statistics, various forecasting techniques) or to a lesser degree, what people report (travel surveys etc.). None of these measures gives us a solid basis for action to reduce energy demand because such metrics mostly obscure what people are doing, and they all fail to reveal the imperatives, norms, social structures, and organisational (im)possibilities that create and delimit the demand for energy. At best, they give us information on the relative energy use of different micro-activities (e.g. boiling a kettle), or of the relative efficiencies of energy sources or devices involved in achieving them. However they do not help us to think about what those activities are for, how negotiable they may be or what alternatives might look like. Worse, by focusing attention on moments of consumption, narrowly defined, they preclude other, potentially more useful forms of understanding and knowing. What we need instead are two things. We need *ways of knowing* that apprehend the social practices and arrangements in which energy consumption is embedded, including testimonies, stories, and narratives of various

kinds. Second, we need *principles* that guide ways of doing and living and that enable them to evolve in less energy consuming ways. Rather than becoming preoccupied with the minutiae of consumption data, we need to embed principles such as a dislike of waste, care for others (including distant others) and mindful consumption. Although laden with history and politics standardised metrics may seem to be morally and politically neutral, and may be appealing for that reason (Shackley & Wynne, 1995). In contrast, some argue that apparent neutrality is part of the problem and that we need values and narratives that are capable of inspiring change (Janda & Topouzi, 2015). Instead of devising ever more precise metrics we should be discussing our values and principles.

Provocation 3. We don't need metrics for policy-making

While some are critical of their effects, others suggest that metrics and quantification are necessary for policy making, for legitimising courses of action, or for knowing a problem at all. Various authors have highlighted the dominance of quantification in policy-making, with some arguing that it has become the 'heart of the modern state' (Espeland & Stevens, 2008; Moezzi, 2015). However there are debates about the extent to which data and information are important for policy-making at all. Well-rehearsed arguments about the myths of evidence-based policy in different areas highlight the messy, ideological nature of policy and politics (Black, 2001; Cairney, 2016; Plant, 2003; Sharman & Holmes, 2010). Others show the importance of storytelling and rhetoric within which forms of quantification are situated. For example, and in relation to energy demand metrics in particular, Moezzi, (2015) writes about how data are utilised in ways that sustain particular narratives. More broadly, evidence does not directly lead to, inform, or translate into policy in any direct or neutral way. The idea that quantitative data is necessary to bring issues onto agendas or to make decisions is questionable. Appeals for instance to identities, ideas, and rhetorical reasoning appear to be just as important. While metrics are threaded through energy policy making, we do not need metrics to make policy or to make it better, nor do we need them to highlight important issues. Instead, measures of all kinds are used in legitimating and obscuring ideas and decisions ultimately taken on other grounds.

Our three provocations are partial, simplified, selective and deliberately challenging. But all call into question the necessity and importance of quantitative metrics for understanding and acting upon energy use. The aim of this challenge is to question the existing emphasis on developing (and using) ever more detailed and all-encompassing numbers as the primary, and sometimes sole means of knowing and addressing the challenges of energy demand.

Instead, we argue that our energies - so to speak - might be better directed toward other projects for delivering change and other approaches to knowing energy demand. Experiential forms of knowledge, argumentation, and narratives which reflect our everyday engagements with energy would be crucial to these endeavours.

References

- Bevan, G., & Hood, C. (2006). What's measured is what matters: targets and gaming in the English public health care system. *Public administration*, 84(3), 517-538.
- Black, N. (2001). Evidence based policy: proceed with care. *BMJ (Clinical research ed)*, 323(7307), 275-279.

- Burchell, K., Rettie, R., & Roberts, T. C. (2016). Householder engagement with energy consumption feedback: the role of community action and communications. *Energy Policy*, 88, 178-186.
- Cairney, P. (2016). *The politics of evidence-based policy making*: Springer.
- DECC. (2012). *What are the factors influencing energy behaviours and decision-making in the non-domestic sector? A Rapid Evidence Assessment*. Retrieved from London, UK: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/65601/6925-what-are-the-factors-influencing-energy-behaviours.pdf
- Espeland, W. N., & Stevens, M. L. (2008). A sociology of quantification. *European Journal of Sociology*, 49(03), 401-436.
- Janda, K. B., & Topouzi, M. (2015). Telling tales: using stories to remake energy policy. *Building Research & Information*, 43(4), 516-533.
- Kempton, W. (1986). Two theories of home heat control. *Cognitive Science*, 10(1), 75-90.
- Moezzi, M. (2015). *Numbers, stories, energy efficiency*. Paper presented at the 2015 ECEEE Summer Study on Energy Efficiency, Hyères, France. http://proceedings.eceee.org/papers/proceedings2015/1-415-15_Moezzi.pdf?returnurl=http%3A%2F%2Fproceedings.eceee.org%2Fvisabstrakt.php%3Fevent%3D5%26doc%3D1-415-15
- Plant, M. (2003). Evidence based policy or policy based evidence? *Addiction*, 98, 397-411.
- Shackley, S., & Wynne, B. (1995). Response-Global climate change: The mutual construction of an emergent science-policy domain. *Science and Public Policy*, 22(6), 415-416.
- Sharman, A., & Holmes, J. (2010). Evidence-based policy or policy-based evidence gathering? Biofuels, the EU and the 10% target. *Environmental Policy and Governance*, 20(5), 309-321.
- Shove, E. (2017). Energy and social practice: from abstractions to dynamic processes. In N. Labanca (Ed.), *Complex Systems and Social Practices in Energy Transitions*, : Springer.