



Emerging Energy Practices in the Smart Grid

with Plus Project in Amsterdam*

Analyzing behaviour of end-users and roles and relations of central actors

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Partners

Wageningen University and Research ▪ Eindhoven University of Technology ▪ Milieu Centraal ▪ Enexis ▪ Demand Centre UK
URSES+: Wageningen University ▪ Alliander ▪ NeoSmart

Period

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While providers still have the lead in presenting new options, they can no longer operate top-down and on their own, in isolation from the everyday lives of householders. Householders and other local actors increasingly and successfully claim (recognition of) a role in the transition to more sustainable energy configurations. Reduction of uncertainties in smart grids can be accomplished with enhanced specific knowledge about new energy routines/practices being built and about the (redefined) social and power relationships created between users and other groups of actors involved in the design, development, use and governance of smart grids. The leading idea of the project is that the intertwined social and technical innovations which are characteristic for smart grids can best be studied with the help of detailed and careful analyses of emerging energy practices in the smart grids.

* Three practices in three Dutch case studies

The project focused on the production of (solar) energy by householders, the planning and monitoring of domestic energy consumption in the context of grid balancing, and storage of energy at household and neighbourhood levels – in three different case studies. These new practices have been conceptualised as resulting from the interplay between (energy) technologies and two important groups of actors: providers and end-users of domestic energy. The results have been discussed with both end-users/ households and energy/technology providers in a series of workshops and focus groups.

* Full title:

Storing renewable energy in urban households

Insights & recommendations

Read more

- 1a. R. Smale, B. van Vliet, G. Spaargaren, (2017): *When social practices meet smart grids* *Energy, Research & Social Science*
1b. R. Smale, G. Spaargaren, B. van Vliet, (2019): *Householders co-managing energy systems: space for collaboration?* *Building Research & Information*
2. P. Oosterveer, G. Spaargaren, S. Kloppenburg (2019): *Political Consumerism and the Social Practice Perspective*, in *The Oxford Handbook of Political Consumerism*
3. S. Kloppenburg, M. Boekelo (2019): *Digital platforms and the future of energy provisioning: Promises and perils for the next phase of the energy transition*, *Energy Research & Social Science*
4. J. Höffken, N. Verkade (2018): *The design and development of domestic smart grid interventions: Insights from the Netherlands* *Journal of Cleaner Production*

Project website

www.energyinpractices.com



- [1] Participation in smart grids does not automatically lead to householders developing new energy (management) practices. Practices such as generating your own green energy and monitoring your energy production and use have become rather normal. The researchers found that these practices allow people to experience and realize an active relationship of stewardship to energy. Yet, for the practices of timing energy use, storing energy, and sharing or exchanging energy many uncertainties still exist for householders. When timing of energy use requires the reorganisation of domestic routines, some household practices appear to be easier to time-shift than others. When home batteries are steered remotely by providers, monitoring becomes more difficult and the householders' active relationship to energy is disturbed.
- [2] The researchers propose a new approach to the governance of transitions in smart grids. The core idea is to distinguish between 'Domestic Consumption Practices' on the one hand, and the so-called 'Home Energy Management (HEM) Practices' on the other. This distinction builds on and elaborates the well-known idea that people in normal life think comfort, ease or cleanliness instead of 'energy'. To involve people in the governance of smart grids, it then makes better sense to single out a particular set of HEM-practices that householders recognize as of direct relevance to their overall domestic energy performance. These HEM-practices are the shared responsibility of householders and experts within systems of energy provision. With the help of HEMs, new instruments for the co-governance of smart grids can be developed in the near future.
- [3] Ownership, control, and use of smart energy technologies and infrastructures can be distributed among householders, energy providers, and new intermediary organisations in various ways. For energy storage, the project has identified the emergence of five organisational modes: individual autonomy; local energy community; smart grid integration; virtual energy community; and power market integration. In addition, digital platforms for energy exchange appear as a new intermediary. These platforms reconfigure how people can access, sell, and buy (green) energy, but also bring along potential externalities for society and the grid.
- [4] Designers, producers, consumers and intermediaries have different ideas on sustainability, sociality and transparency in smart grids. With interviews (implicit) assumptions about householders and their practices were identified. This showed that current smart energy interventions are designed based on decisions favouring technological default, certain sticky user-assumptions, and automated control. To discuss images and moralities with householders, the project developed a serious game workshop. Preliminary results show that householders primarily see energy as a domain in which they can cultivate some stewardship or responsibility for their (or just 'the') environment.

The research programme Uncertainty Reduction in Smart Energy Systems (URSES) aims to make a quick transition to a reliable, affordable and sustainable energy system possible. It is a joint initiative of several departments of NWO, Shell, AMS and the TKI Urban Energy.



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