

# SmaRds Smart Regimes for Smart Grids

## Adapting legal and planning systems to decentralization

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The current legal framework is not designed for smart grids, as it is tailored to a top-down, centralized electricity grid in which grid-related decisions are taken centrally. The transition to a Smart Energy System requires a new legal and organizational regime when local electricity systems are designed, maintained or adapted. The project SmaRds addressed legal and planning uncertainties with regard to the integration of smart grid technology and management in local energy systems. SmaRds incorporated two disciplines: governance and law.

### \* A legal and a planning framework with policy recommendations

SmaRds developed an integrated package including both the legal design for smart grid deployment in real life situations and the policy design for construction and renovation at the local level. In general, the research shows that there is a strong mismatch between emerging organizational structures in smart grid projects and the envisaged setting by the current legal framework. Yet, additional findings from the legal project also show that law has the potential to steer developments in the energy system and to mitigate and prevent future uncertainties.

## Insights & recommendations

### Read more

- 1 L. Diestelmeier and D. Kuiken (2017): [Smart Electricity Systems: Access Conditions for Household Customers Under EU Law](#), *European Competition and Regulatory Law Review*
- 2 L. Diestelmeier, I. Lammers (2017): [Experimenting with Law and Governance for Decentralized Electricity Systems: Adjusting Regulation to Reality? Sustainability](#)
- 3 L. Diestelmeier (2019): [Changing Power: Shifting the Role of Electricity Consumers with Blockchain Technology – Policy Implications for EU Electricity Law](#), *Energy Policy*
- 4 I. Lammers, (2018), [Rules for Watt? Designing Appropriate Governance Arrangements for the Introduction of Smart Grids](#), PhD thesis, Enschede
- 5 M. Heldeweg, I. Lammers (2016): [Smart design rules for smart grids: analysing local smart grid development through an empirico-legal institutional lens](#) *Energy, Sustainability and Society*
- 6 I. Lammers, M. Arentsen (2017): [Rethinking Participation in Smart Energy System Planning](#), *Energies*

- [1] A legal framework that enables and incentivizes smart grids needs to be technology-neutral and actor-neutral. This implies that the legal framework needs to 1) define system users by their flexibility capabilities, 2) include communication infrastructure dedicated to smart grid purposes by defining minimum quality standards of services and access conditions for system users, and 3) integrate automation for flexibility provision. These three points have major implications for the current legal framework of the electricity sector and specifically for incentive schemes, pricing mechanisms, consumer protection frameworks, and the role of communication networks.
- [2] Energy planning and the realization of a new energetic infrastructure has become a complicated process. Research shows that: (1) efficiency in local energy planning on the introduction of smart grids is low; (2) there is mostly a lack of residents' participation in the local planning process of their city district's energy infrastructure; and (3) several rules-in-use are disabling local energy planning as well as are often conflicting with (experimental) rules-in-form. These three aspects show that improvements need to be made to local energy planning practices on the introduction of smart grids.

- [3] For the improvement of local energy planning and to facilitate the introduction of smart grids, an institutional architecture and a process architecture have been designed. The institutional architecture facilitates the analysis and lawfully consistent design of institutional arrangements for the introduction of smart grids. The researchers refer to this architecture as ILTIAD framework because it combines the IAD framework of Elinor Ostrom with a normative dimension reflected by institutional legal theory (ILT). In sum, the ILTIAD framework shows which normative constraints and opportunities exist for a local smart grid project, as well as which changes in institutional arrangements are needed to arrive at a desired smart grid. The second heuristic, the process architecture, is developed with the aim to accelerate decision-making on the design and implementation of smart grids. This architecture in the form of a decision-making approach specifies the functional participation of actors in different phases of decision-making. It also helps to increase the acceptance of chosen smart grid designs, and more generally the effectiveness and efficiency of decision-making processes for introducing smart grids.

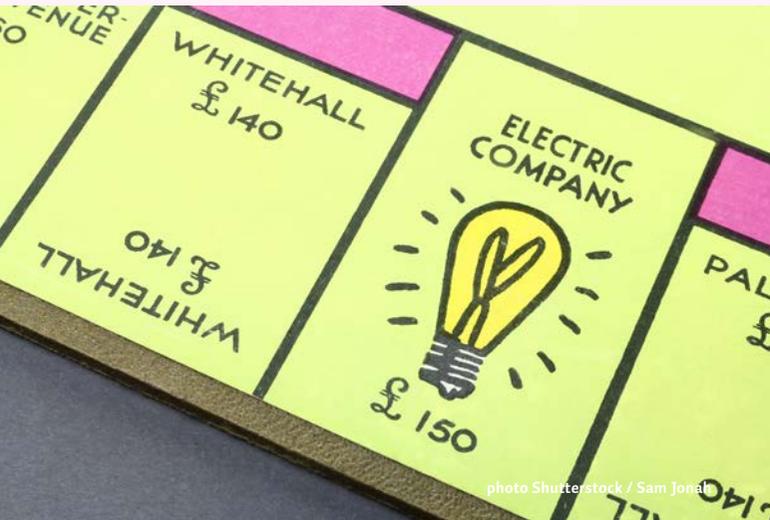


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The research programme Uncertainty Reduction in Smart Energy Systems (URSES) aims to make a quick transition to a reliable, affordable and sustainable energy system possible. It is a joint initiative of several departments of NWO, Shell, AMS and the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



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