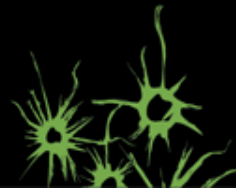


# Experimenting with Law and Governance for Decentralized Electricity Systems: Adjusting Regulation to Reality?



Imke Lammers & Lea Diestelmeier



# Introduction

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- Legal framework closely connected to technical setting of electricity system
  - *Vice versa*: legal framework needs to facilitate deployment of new technologies
- Decentralized electricity systems (smart grids): technical and economic possibilities for “prosumers” to develop as market participant
  - Harnessing flexibility in demand

- Which lessons can be learned from experimentally-acquired results regarding new modes of governance for a decentralized electricity system?
  - Experimental legislation in the Netherlands

# Background – the Netherlands

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- 12 ‘Innovatie Programma voor Intelligente Netten’ (IPIN) pilot projects, 2012 (3 – 4 years)
  - implementation of technical smart grid innovations (DG, storage, demand-response)
  - in the majority of the projects (nine out of 12) the regional DSO became the leading actor in the project
  
- Main finding: Legal and governance barriers
  - strict division between market- and grid-related tasks/ desire for ‘flexible system operation’ (combining generation, transport, storage, and supply)
  - need for licence to supply electricity (barrier for peer-to-peer supply of electricity)
  - Static electricity prices and network tariffs

experimental legislation  
= temporary testing of novel legal  
approaches

## In search of a novel legal framework for governance

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### Crown Decree for Decentralized Renewable Electricity Generation

*(Besluit experimenten decentrale duurzame elektriciteitsopwekking)*

➤ Aim

- Investigate in how far novel organisational forms contribute to:
  - ✓ increasing DG or CHP at local level
  - ✓ foster more efficient use of the energy infrastructure
  - ✓ and improve consumer involvement in own energy provision
- Evaluate outcomes, possibly adjust legal framework (2019)

10 years  
max.

## The Experimentation Decree

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- **Collective entities in charge** (cooperations or owners' associations)
  - Control through members
  - DSOs and suppliers are not allowed as members
  - “*from protected to empowered consumers*” (explanatory memorandum of Decree)
  
- **Two types of projects:**
  - a. “Project networks”
    - one connection to the public distribution system, located within geographically delineated area, max. 500 connected customers
  
  - b. “Large experimental projects”
    - within the service area of DSO, max. 10.000 connected customers

# Three main exemptions from the standard Dutch Electricity Act 1998

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- Legal monopoly for DSOs
  - Collective entity can carry out distribution operational tasks (“project networks”)
- Supply license
  - Collective entity automatically receives supply license → peer-to-peer supply
- Network tariff approval
  - Collective entity can establish dynamic network tariffs

*De jure:*

- association carries out generation, system operation, and supply (re-bundling)
- end users more central role

# Insights in projects (launched 2015 and 2016)

Project	Form	Main stakeholder	Technologies
Zwijzen Veghel	Project network	Starlight B.V. (project developer)	PV panels (200 kWp), CHP (20 kW electrical, 80 kW thermal), energy management via ICT, dynamic tariffs
Endona	Project network	Energy association Escozon	PV panels (park with 7.200 panels) biodigester, p2p, energy management via ICT
Greenparq	Project network	Real estate company Green Real Estate B.V.	PV panels on the roofs of common facilities, heat pumps, p2p
Schoonschip	Project network	Research centre CWI	PV panels, heat pumps, solar thermal collectors, home batteries, p2p, energy management via ICT
Noordstraat 11 Tilburg	Project network	Starlight B.V. (project developer)	PV panels (3000 Wp), solar thermal collectors, energy management via ICT
Villa de Verandering	Project network	Energy cooperation	Heat pumps, solar thermal collectors, PV panels, residential wind turbine, batteries, energy management via ICT, p2p
Aardehuizen	Large exp. project	Owners' association Aardehuizen Olst	PV panels, collective battery, energy management via ICT, p2p, dynamic tariffs
Kringloopgemeenschap	Large exp. project	Energy cooperation De Windvogel	2.3 MW wind turbine (5 GWh/year), 16.000 PV panels (3.4 GWh/year), dynamic tariffs

# Findings

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- Risks of re-bundling
  - bears the risk of eliminating competitive market forces
- Restrictions for other actors and activities
  - E.g. professional project developers, enterprises, real estate companies involved
  - aggregators who manages flexibility of grid users
  - electricity storage could be a new commercial activity
- Limited active consumer involvement
  - Little dynamic electricity tariffs
  - 500 connected users max.



## Concluding remarks

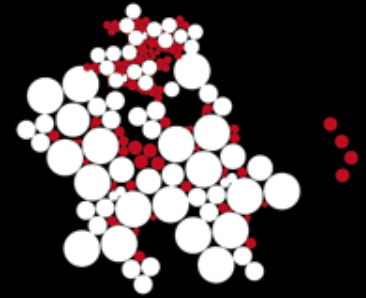
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- Can experimental projects serve as knowledge source for upscaling governance structures for decentralized electricity systems (smart grids and LECs)?
  - Experiments allow shift in existing tasks (system operation, supply, generation)
  - Emergence of new forms is not possible
    - e.g. flexibility aggregation
  - Re- bundling of activities?
    - generation, system operation, supply=one actor?

## Three key messages:

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- 1) Experimentation Decree too restricted regarding new modes of governance for a decentralized electricity system in real-life settings.
- 2) Prosumers central role vs. involvement of experts
- 3) Parallel, similar developments at the EU level might cause the risk of establishing different or even clashing modes of governance.



**Thank you for your attention!**



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