

## **Are low-carbon futures decentralised? Visions and praxis in governing collective electric systems**

**Venue & date:** Fridtjof Nansen Institute, Fridtjof Nansens vei 17, 1366 Lysaker, 4-5 September 2024

**Workshop convenors:** Siddharth Sareen, Tor Håkon Jackson Inderberg and Per Ove Eikeland

The most crucial enablers of rapid decarbonisation are low-carbon electricity generation and the electrification of multiple sectors. This means that low-carbon futures are inextricably tied up with *electric systems*. Electricity goes beyond the energy sector, to couple sectors and societal rhythms. These electric systems have a spatial ontology whose broader implications scholars and practitioners have only begun to understand. While most authors acknowledge that the centralised-decentralised dimension of electric systems should include both social and technical aspects of organisation, the 'pure' measure of this dimension is still usually done in a technical way while externalising the social aspects to the realms of energy democracy, energy justice or other concepts. These social aspects tend to touch on ownership structures, responsibility and influence, ownership and economy, and regulation. Many contributions hold that there are interrelationships between infrastructural decentralisation, decentralisation of governance, and organisational structures.

While energy generation is becoming more spatially distributed in Europe, what is happening to electric systems? As the backbone of low-carbon futures, are electric systems in European countries centralising or decentralising operational control and infrastructural investments? How do national regulations affect electricity sector organisation? What factors have determined recent regulatory trends, how are these trends evolving, and with what effect on electric futures? This workshop will produce an edited volume that features a framework to make sense of organisational and regulatory changes in European electric systems, anchored in numerous diverse case studies by participants.

Of the three dimensions specified above, the infrastructural dimension of electric system decentralisation is perhaps more tangible, at least at the surface. It is often used interchangeably with terms like 'distributed energy', but it also entails other tasks and functions tied to balancing supply and demand for energy, such as the share of small-scale production in electricity mixes, demand-side flexibility (for instance through energy storage solutions and automation), the spatiality of distribution, and the proximity/remoteness of grid control logics.

Decentralisation of governance refers to institutional structures and processes of decision-making about the electric system, which are closely linked to questions of ownership, control and authority. This includes decisions about generation technologies and siting (licensing, support system, eligibility); the rules and regulations for the development of relevant technology that influence the shape and direction of the electric system (smart meters, digitalisation, storage provisions, small-scale and prosumer production); and related roles for different actors both in the market-exposed and protected segments of the electric system. Here, questions of levels at which institutional competence is available, participation in decisions, and the nature of ownership matter.

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The organisational field, the role of incumbents, and ownership structures influence decision-making. Organisational developments can be characterised as centralised where there are few actors with little diversity who own large parts of the infrastructure and assets in an electricity system. Numerous aspects may be linked to decentralisation developments, including shifts in distribution system operator mandated and interpreted roles and practices, the interface and split of responsibilities between distribution and transmission system operators, the organisational flora in

the electric system, and many other possible operationalisations. In cases where an electric system is more diversified and decentralised in generation, one might expect this to be reflected in a more diverse organisational field, with a higher number of companies and organisations with more diverse core activities. Local prosuming and other grassroots renewable energy initiatives may be dependent on a favourable institutional context, making organisational fields and institutional contexts important measures for decentralisation beyond the structure of electricity generation.

Sponsored by the PowReg project (<https://www.fni.no/projects/regulating-power-in-norway-decentralization-or-centralization-powreg>) and the COST Actions SHiFT (<https://shift-cost.eu>) and PED-EU-NET (<https://pedeu.net>), this fully-funded output-oriented workshop at the Fridtjof Nansen Institute in Oslo (<https://www.fni.no>) will advance knowledge, discussion and collaboration on collective electric futures, by addressing decentralisation dynamics of infrastructure, governance and organisations related to electric systems. Increasingly, European policy is taking forward a focus on renewable energy communities and positive energy districts as a means to transform our energy systems for more sustainable futures. Sustainability requires lower carbon emissions and greater collective control and ownership over vital societal resources such as electric systems, to promote socioeconomic equity. Yet how do low-tech imaginaries, convivial future-making, and transformative practices come about? Are we rather seeing a move to centralise, and can this deliver similar outcomes, or will it reproduce existing power relations in spatially-materially novel electric futures?

This workshop will convene a select group of 20-25 participants shortlisted based on an open call for abstracts. Invited participants will contribute to an edited volume published by Edward Elgar with 4,000 word chapters. Short first drafts will be workshopped using discussants and editorial feedback, with final versions due for external peer review two months after the workshop. We will exploit strong synergies between ongoing research projects and European networks on user-centric energy futures. A hallmark of this workshop and collection will be the emphasis on user-centric electric futures, combining grounded insight into socio-technical transition processes with contextual specificities. Creative approaches and transdisciplinary collaborations are encouraged in order to help bring these discussions into wider cultural domains.

#### **Timeline and key dates:**

4-5 September: workshop in Oslo to discuss draft chapters | 31 October: 5,000 word full drafts due | 15 November: book ready for submission after final editorial checks | Mid-2025: book publication

**Workshop programme** | Pre-final version on 16.08.2024 (with two discussants allocated per chapter)

#### **Wednesday 4 September 2024**

**08:30-09:00** Arrival at the Fridtjof Nansen Institute, soft start in the workshop room over coffee

**09:00-09:30** Welcome and introduction to the workshop by the three convenors

**09:30-10:30 Keynote 1: Nicolò Rossetto**

**10:30-10:45** Comfort break

**10:45-12:00** *Discussion of three chapters*

Designing institutional technologies for decentralized energy governance – **Viktor Bukovszki** and Michael Mrissa

**Discussants: Giada Coleandro and Julian Gregory**

Quantum transformation of electric systems: The techno-organizational perspectives – **Boris Kantsepolsky**

**Discussants: Tor Håkon Inderberg and Claudius Kübler**

Balancing scales: Decentralisation and long-distance transmission in EU policy discourse – **Daniel Wuebben**

**Discussants: Cristian Pons-Seres de Brauwer and Arian Mahzouni**

**12:00-13:00** Lunch break with optional tour of Polhøgda with Bente Sommerstad (12:40-13:00)

**13:00-14:00** **Keynote 2: Jenny Palm**

**14:00-14:50** *Discussion of two chapters*

Concept of building a structurally variable power system – **Sergii Saukh (online)**

**Discussants: Claudius Kübler and Per Ove Eikeland**

How distributed energy will affect the bulk power system – **Fereidoon Sioshansi**

**Discussants: Arian Mahzouni and Tor Håkon Inderberg**

**14:50-15:10** Comfort break

**15:10-16:00** *Discussion of two chapters*

Climate shaped weather, shifting energy demands and conflict: Advancing a nuanced understanding of power outages across Europe – **Thomas Ptak** and Julie Brooks

**Discussants: Cristian Pons-Seres de Brauwer and Julian Gregory**

Regional energy hubs: speculative design exploration of future decentralized energy systems – **Mahshid Hasankhani**

**Discussants: Georg Heinemann and Fereidoon Sioshansi**

**16:00-20:00** Break, optional social pints from 19:00 onwards at The Dubliner Oslo, Rådhusgata 28

**20:00-23:00** Sponsored workshop dinner at Sentralen, Øvre Slottsgate 3

**Thursday 5 September 2024**

**08:30-09:00** Soft start over coffee

**09:00-10:00** **Keynote 3: Michael Pollitt**

**10:00-10:50** *Discussion of two chapters*

Path-creation energy infrastructure planning for positive energy city-districts: the sector coupling pathways for the new city-district of Dietenbach in Freiburg, Germany – **Arian Mahzouni** and Harald Schaich

**Discussants: Boris Kantsepolsky and Daniel Wuebben**

Decentral energy management in prosumer households through an enhanced smart meter infrastructure and event-driven tariffs: a German case study – **Claudius Kübler**, Jiayin Fu, Matthias Grandel

**Discussants: Thomas Ptak and Viktor Bukovszki**

**10:50-11:10** Comfort break

**11:10-12:00** *Discussion of two chapters*

Halfway to decentralisation? Understanding the energy paradigm shift in Italy – **Giada Coleandro**

**Discussants: Mine Sertsöz and Mahshid Hasankhani**

Design and implementation of sustainable energy communities in Colombia – **Georg Heinemann**, Ana María Ramírez Tovar and Pasha Alidadi

**Discussants: Per Ove Eikeland and Giada Coleandro**

**12:00-13:00** Lunch break with optional ocean swim (bring swimsuits and towels!)

**13:00-13:50** *Discussion of two chapters*

Building back better? Reviewing scenarios of a decentralised post-war electricity system in Ukraine – Nadiya Kostyuchenko, **Cristian Pons-Seres de Brauwer**, Adrian Rinscheid and Rolf Wüstenhagen

**Discussants: Mahshid Hasankhani and Mine Sertsöz**

Innovation and efficiency in Norwegian utilities: The development of modern utilities in Norway – **Jørgen Bjørndalen**

**Discussants: Viktor Bukovszki and Georg Heinemann**

**13:50-14:10** Comfort break

**14:10-15:00** *Discussion of two chapters*

Floating-offshore-wind: a decentralising disruptive-technology, and 'game-changing' for economies – **Julian Gregory**

**Discussants: Fereidoon Sioshansi and Boris Kantsepolsky**

Electric futures in Turkey: Decentralisation, regulatory trends, and carbon tax implications – **Mine Sertsöz**

**Discussants: Daniel Wuebben and Thomas Ptak**

**15:00-16:30** Wine reception at Polhøgda