

A new world for electricity transactions: Peer-to-Peer and Peer-to-X

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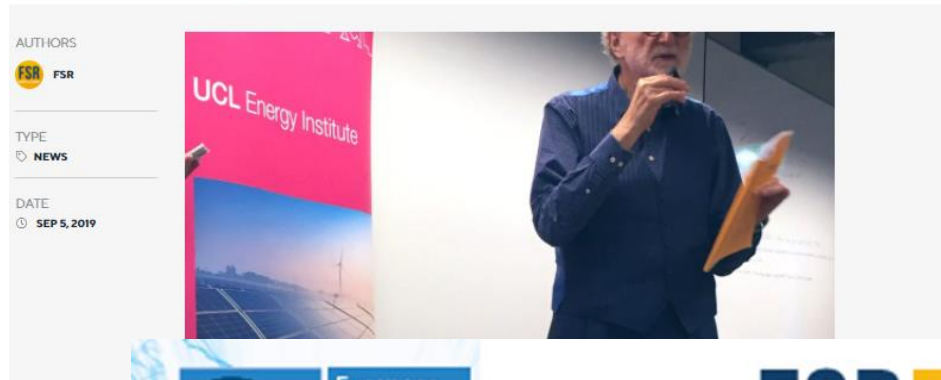
Summary

- Introduction
- Beyond B2B and B2C
- Peer-to-Peer transactions
- Peer-to-X transactions
- Three essential components of the new transactional world

Introduction

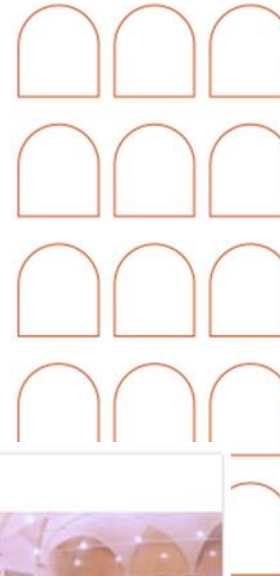
ENERGY & CLIMATE

FSR participates in the launch of the Global Observatory on P2P, CSC, and TE models at UCL



Peer-2-Peer in the Electricity Sector: an Academic Compass in the Making
By Jean-Michel Glachant, Florence School of Regulation

Highlights



RSC 2021/56
Robert Schuman Centre for Advanced Studies
Florence School of Regulation

WORKING PAPER

A new world for electricity transactions:
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Jean-Michel Glachant and Nicolò Rossetto

ELECTRICITY

EVENT HIGHLIGHTS

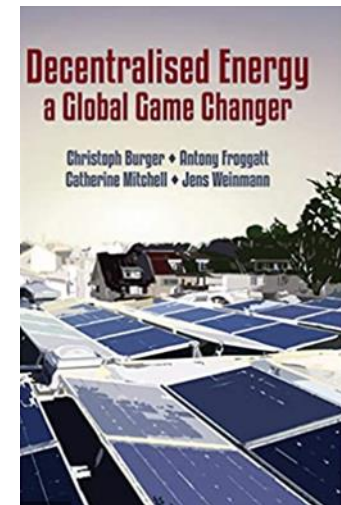
Between new trading platforms and energy communities

There is a growing interest, in Europe and beyond, for new ways of producing, exchanging and consuming energy. On 17...



Beyond B2B and B2C

- Limited role for “peers” in traditional electricity markets
- B2B transactions in wholesale markets
- B2C transactions in retail markets
- But things are changing
 - Deployment of DERs behind the meter
 - Digitalisation of distribution grids and customers’ premises
 - Consumer stratification
- Small and non-professional actors no more only on the “buying” side
 - Peer-to-peer transactions
 - Peer-to-X transactions



Peer-to-Peer transactions (1)

- Peers on both sides of the transaction
- Very demanding type of transaction with still limited concrete implementation
- Three forms currently being trialled around the world
 - A. Peer-to-peer in a sandbox
 - B. Peer-to-peer within a platform
 - C. Peer-to-peer in a community

Peer-to-Peer transactions (2)

- P2P in a sandbox
 - Closed space of limited size where some rules applied to electricity are changed
 - Peers can enrol but do not lead the process
 - A few tens of peers trade surplus generation at the local level
 - Frequent involvement of blockchain
 - Local utility and energy supplier involved
- Examples
 - Brooklyn Microgrid (US)
 - Quartierstrom (CH)
 - RENEW Nexus (AUS)



Quartierstrom



Peer-to-Peer transactions (3)

- P2P within a platform
 - Open space supporting two-sided markets via network effects
 - Peers can enrol but have to respect the rules set by the platform
 - A potentially large number of peers can trade electricity or some attributes of it
 - ✓ Green
 - ✓ Local
 - Detailed data on peers needed (e.g., smart meters)
 - Need to respect the rules of the electricity system
 - ✓ Platforms acting formally as an energy retailer
- Examples
 - Vandebron (NL)
 - Bolt (BE)



Peer-to-Peer transactions (4)

- P2P in a community
 - Open space for bottom-up initiatives either at the local or dispersed level
 - Peers can enrol to
 - ✓ Join resources and expand scale & scope at which they operate
 - ✓ Create new relations
 - Enduring limited size and skills call for support by specialised agents
 - P2P only one of many different activities performed
- Examples
 - Partagélec (FR)
 - Beehive Project (AUS)



Peer-to-X transactions (1)

- Peers only on the supply side
 - Offering their DERs
- The “professional” side facilitates the transaction
- Some forms already well established, while other emerging only recently
 - Peer-to-System via Feed-in Tariff
 - Peer-to-Grid via aggregators or local flexibility markets
 - Peer-to-System with an integrator

Peer-to-X transactions (2)

- Peer-to-System via FiT
 - Well established and 'peer-friendly' transaction
 - Peers 'damp' any excess generation into the grid
 - Fixed remuneration over a long time frame
 - A professional entity in charge of collecting and marketing electricity
- Phase-out of support measures call for new arrangements and revenue streams



Peer-to-X transactions (3)

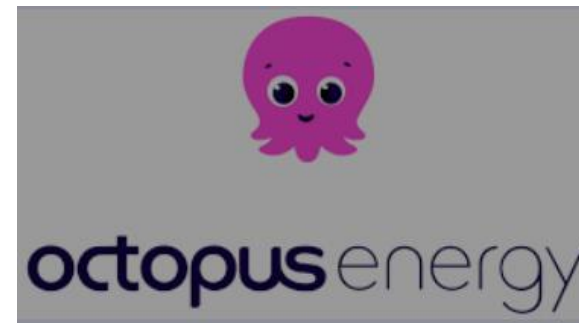
- Peer-to-Grid via aggregators or local flexibility markets
 - Emerging due to increasing value of flexibility
 - More demanding type of transaction
 - Several possible arrangements
- Aggregation of retail customers still less developed than C&I
- Local flexibility markets tested across Europe
- Examples:
 - Voltalis (FR)
 - Piclo Flex (UK)

VOLTALIS



Peer-to-X transactions (4)

- Peer-to-System with an integrator
 - Specialised asset-light intermediary linking peers to the power system
 - Integrated management of all BTM assets
 - Provision of residual demand
- Towards energy as a service?
- Examples:
 - SonnenCommunity
 - Octopus-Tesla Energy Plan



Three essential components of the new transactional world

- P2P and P2X transactions rely on alignment of three components
 - Transaction loop to deal with transaction costs
 - Pricing mechanism to incentivise peers
 - Delivery loop to provide the service
- Peers need support by some intermediary or third party
- Digitalisation: an enabler
- Business models: is there enough value to create & capture?
 - Electric vehicles as a game changer?
- Regulation of electricity supply and networks: a possible barrier?

Thank you for your attention

To read the paper: <https://cadmus.eui.eu/handle/1814/71520>

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