



# The future of prosumer business models: balancing the needs of communities and the energy system

Dr Donal Brown – Research Fellow  
Unv. Leeds, SRI

[D.L.Brown@leeds.ac.uk](mailto:D.L.Brown@leeds.ac.uk)

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## Leeds team working on prosumer business models and finance



Dr Steve Hall  
Unv. Academic Fellow  
Energy market expert  
and political  
economist



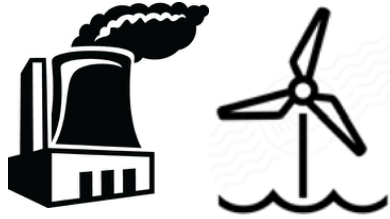



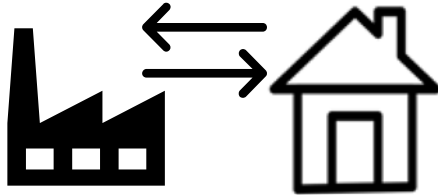

Dr Mark Davis  
Associate Professor  
Economic  
sociologist, expert in  
alternative finance



Dr Donal Brown  
Research Fellow  
Housing, retrofit and  
business models

# What are prosumers?

- Concept originates from Alvin Toffler's Third Wave (1980)
  - 'Actors who both produce and consume renewable energy and actively modulate their demand.' (Brown et al., 2019)

System type	Network Level
<u>Centralised Energy Systems</u>  Thermal power stations, Hydro-dams, Offshore wind farms	High voltage transmission network 400-50kv- 
<u>Distributed Energy Systems</u>  Solar farms, Wind turbines, Micro-hydro	Low voltage distribution network 50-1kv 
<u>Prosumer Energy systems</u>  Building connected solar, CHP, Micro-wind, Pico-hydro.	Ultra-low voltage domestic/commercial network 400-110v 

# Business models



## Business models

*“the nature of value delivered, how organisations and networks create that value and the means of capturing revenues from these activities” (Brown, 2018)*



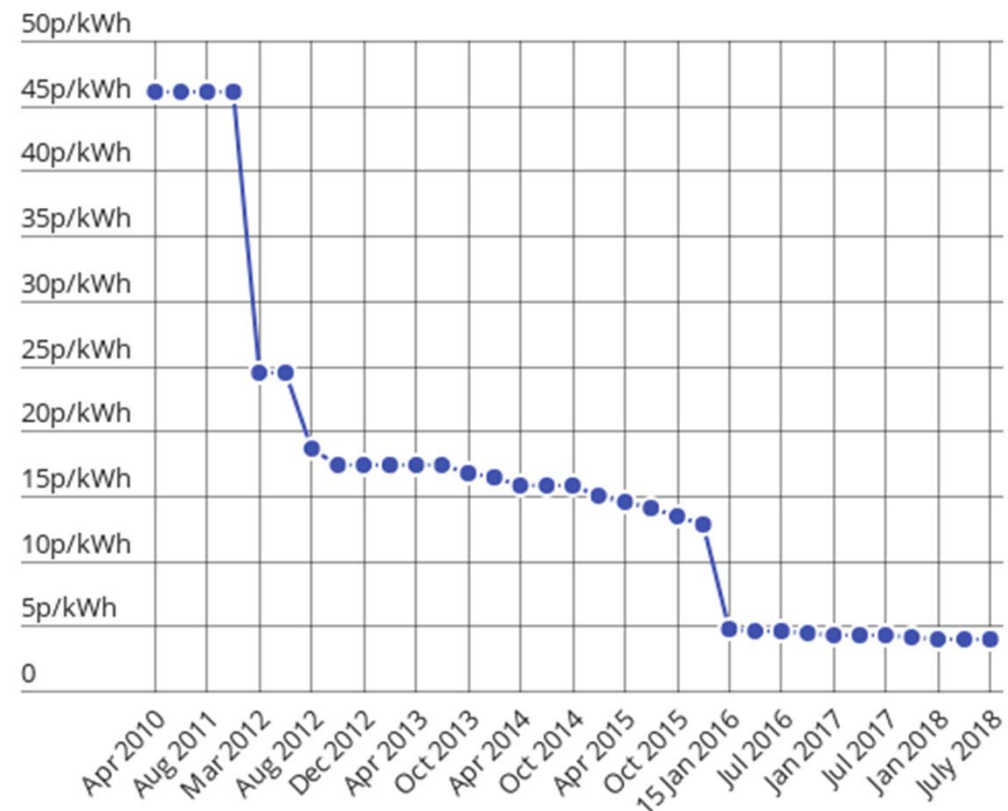
# Subsidy dependent business model

- Feed-in-Tariffs (FITs)
  - £0.46/kWh 2010
  - £0.04 /kWh 2019
- 937,000+ PV installations by 2018
  - Scheme ended 30/03/19

## Issues for business model

- FIT subsidy dependent
- Poor export prices
- Lacks dynamic self consumption
- Does not interact with wider system

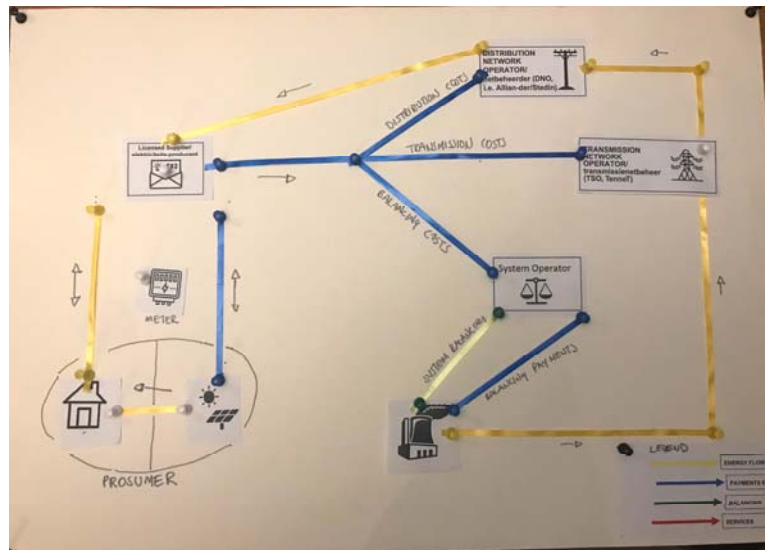
## Solar PV feed-in tariff generation payments 2010-2018





# Business model generation

- Interviews and Business model workshops in UK, Germany, Spain, Netherlands, Portugal, Belgium, Croatia
- Hands on co-creation methodology
- Use craft materials to visualize business models



# Governance

## Governance

*“the institutions, mechanisms and processes through which economic, political and administrative authority is exercised”*  
(Goldthau, 2014, p. 135)

# Community logic

- Citizen participation
- Charities and Cooperatives
- One member one vote - directly democratic
- Community crowdfunding through equity share offers
- Favor business models which maximize local value retention like micro-grids



“

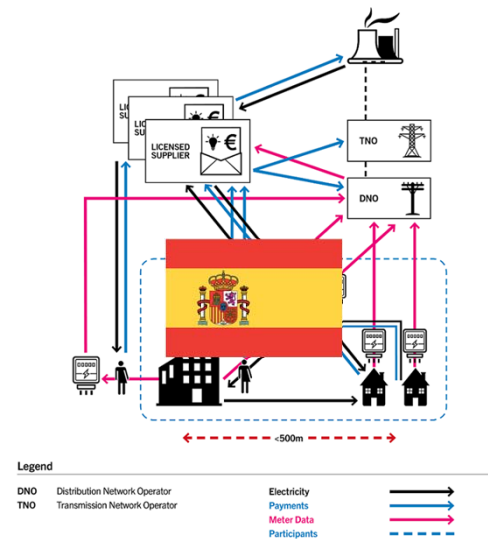
Our pensions and savings won't be much good to us if our society is fundamentally threatened by climate change. We all need to divest from fossil fuels and positively invest in clean tech.”

NIKKI, BEC INVESTOR

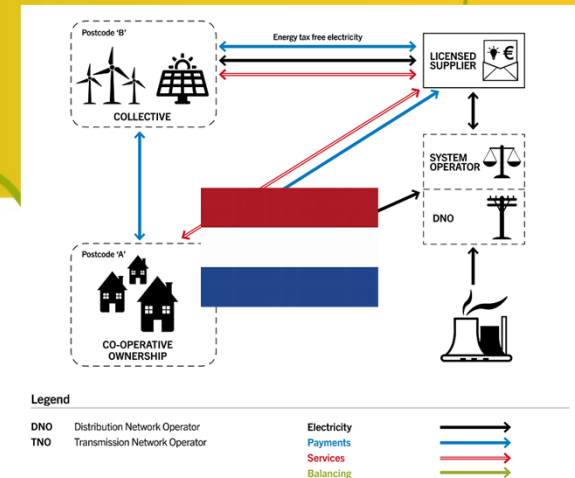


# Local business models

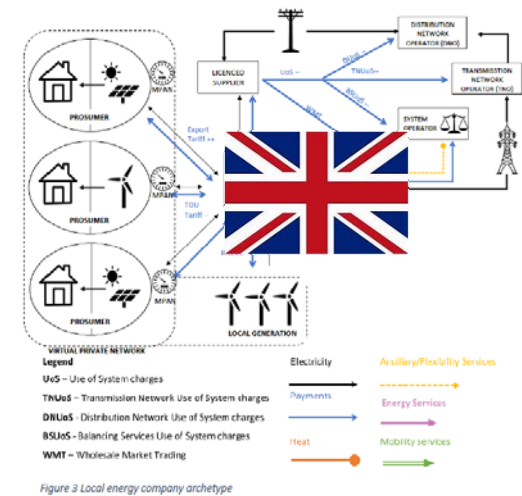
- Focus on
  - 1. Self consumption
  - 2. Local markets
- Delivering local economic value and ownership
- Emphasis on non-economic and social value
- Questions surrounding value to wider system
  - Network charges
  - Death spiral
  - Local vs. National pricing



ES: Community Self Consumption



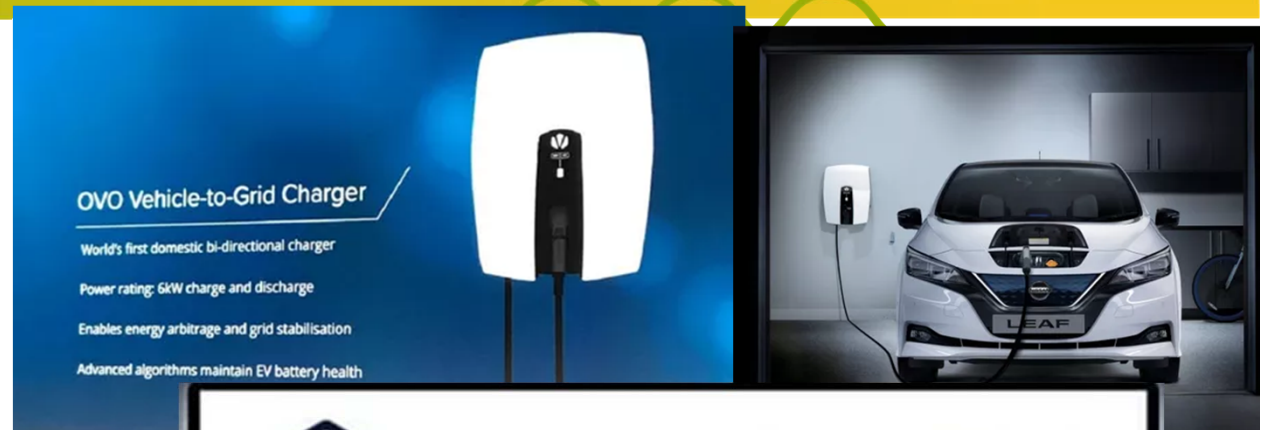
NL: Post-code-rose



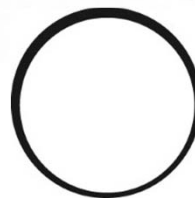
UK: Local Energy Company

# Market logic

- Value captured by traditional & challenger utilities entering prosumer market
- Corporate governance model - private and publicly listed firms
- Emphasis on consumer choice
- OVO/Kaluza moving into domestic flexibility market
- Centrica & Sonnen trialing Virtual Power Plant
- Optimize IoT enabled devices, EVs, heat pumps, batteries



**centrica**

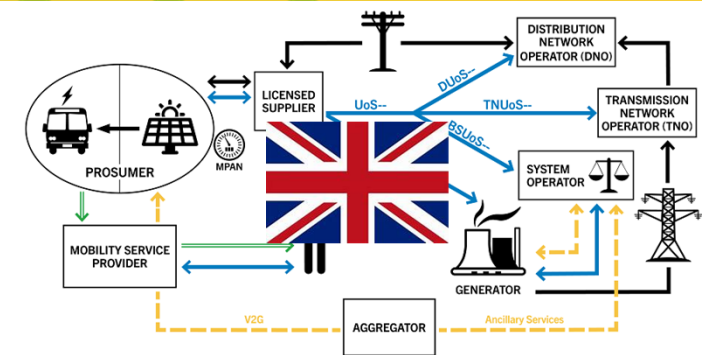


sonnen



# Aggregators, virtual power plants, V2G

- Participate in Flexibility and Ancillary Service markets
- Pairing rooftop PV with direct load control of flexible assets
- V2G, VPP, Wholesale markets
- Requires sophisticated aggregators
- New revenue streams available with TSOs & DSOs



## Legend

UoS	Use of System charges	Electricity	→
TNUoS	Transmission Network Use of System charges	Payments	→
DNUoS	Distribution Network Use of System charges	Ancillary/Flexibility Service	→
BSUoS	Balancing Services Use of System charges	Mobility Services	→
WMT	Wholesale Market Trading		

## UK: Vehicle to Grid

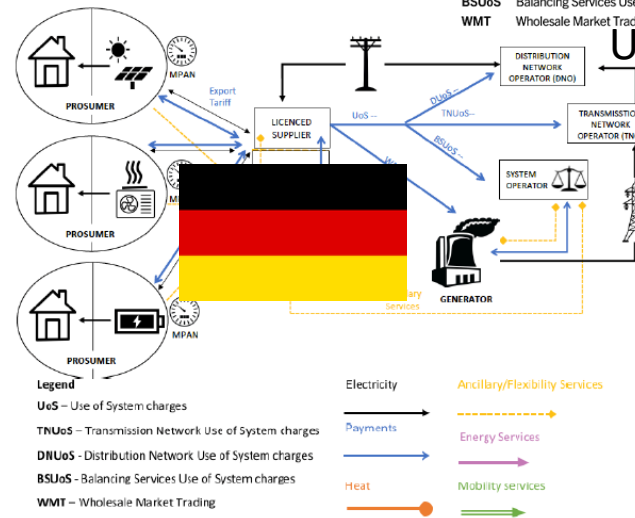


Figure 5 Flexibility service provider/virtual power plant

## DE: Virtual Power Plant

## Two contrasting logics for prosumer business models

### Community logic

Delivers 'community value': citizen empowerment and agency through community ownership, control and profits!

- Political economy: polycentric governance, localism and a retreat of both market and state (Ostrom 2010; Creamer et al., 2017)

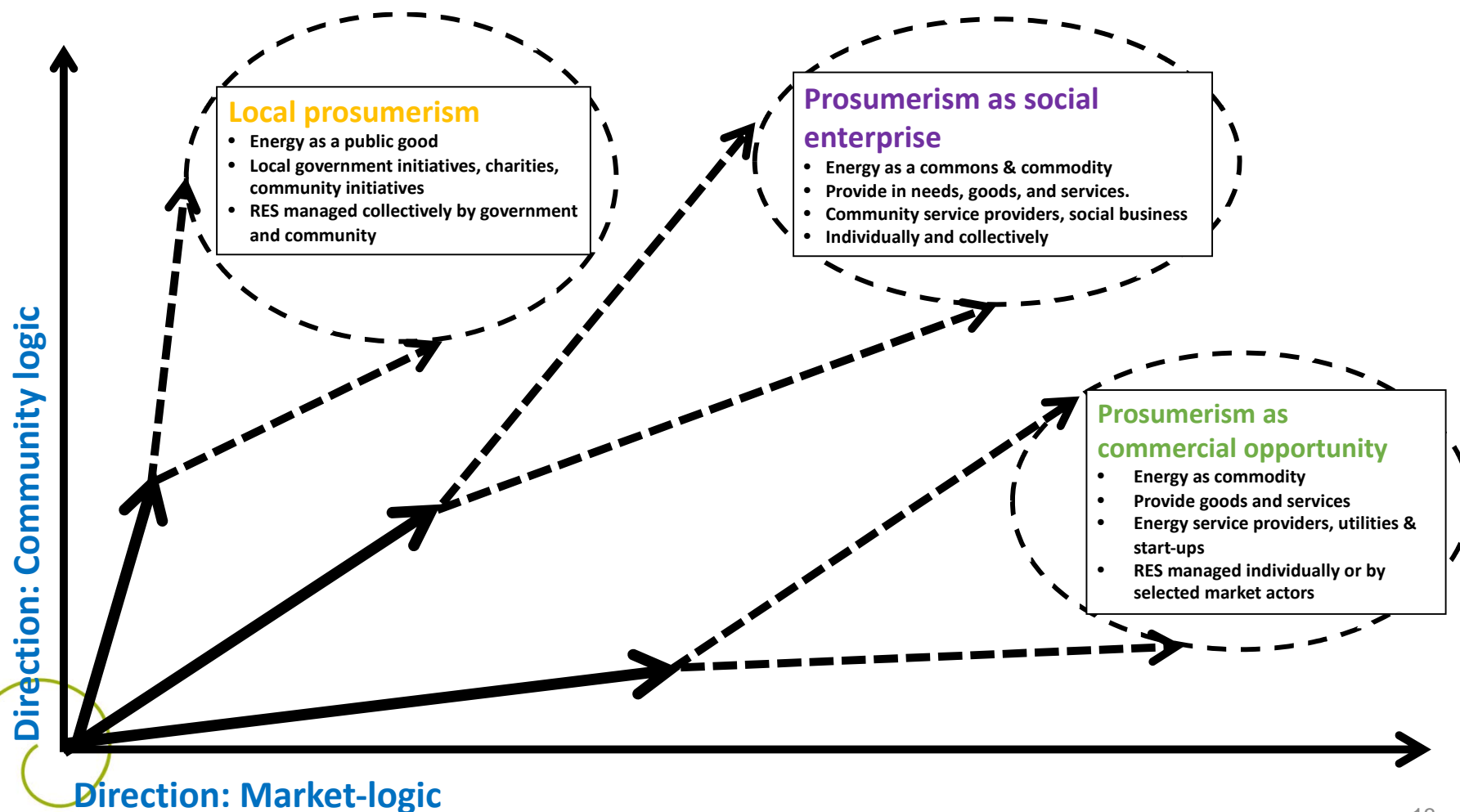
### Market logic

Delivers shareholder value: facilitates adoption of technology, and drives efficiency through IoT enabled devices, although delivers little institutional change. Profits are distributed to shareholders.

- Political economy: neoclassical economics, free markets and privatised model of infrastructure provision (Kuzemko et al., 2016)



# Three futures for prosumerism





# Thank you!

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drift for transition



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