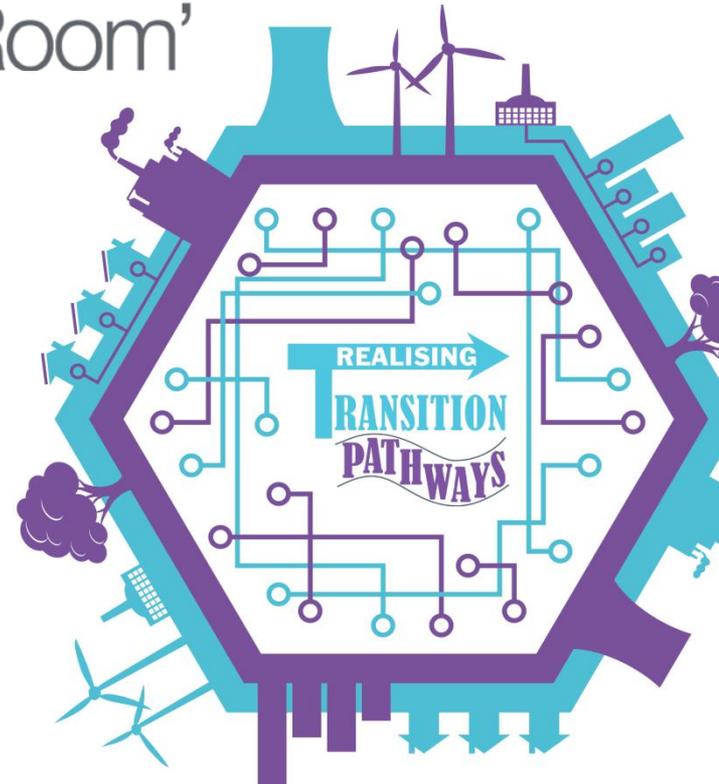


# Distributing Power

A transition to a civic energy future

Report of the Realising Transition Pathways  
Research Consortium 'Engine Room'





Whole systems analysis for a UK more electric low carbon energy future

- A £3.17million continuation of the successful 'Transition Pathways' project that ran 2008 to 2012.
- Interdisciplinary team: power systems engineers, environmental scientists, social scientists, energy economists and socio-technical transition scholars
- EPSRC funded collaboration of 9 universities:



# Transition pathways

- 3 Alternative Pathways of Scenarios

- All reduce greenhouse gas emissions by 80% in 2050 compared to 1990

**Market Rules:** After the creation of a broad policy framework, the state allows competition and private companies to deliver sustainable, affordable energy.

**Central Coordination:** Central to this pathway is the role of the nation state in actively delivering the transition.

**Thousand Flowers:** This pathway is characterised by a greatly expanded role for civil society in delivering distributed low-carbon generation.

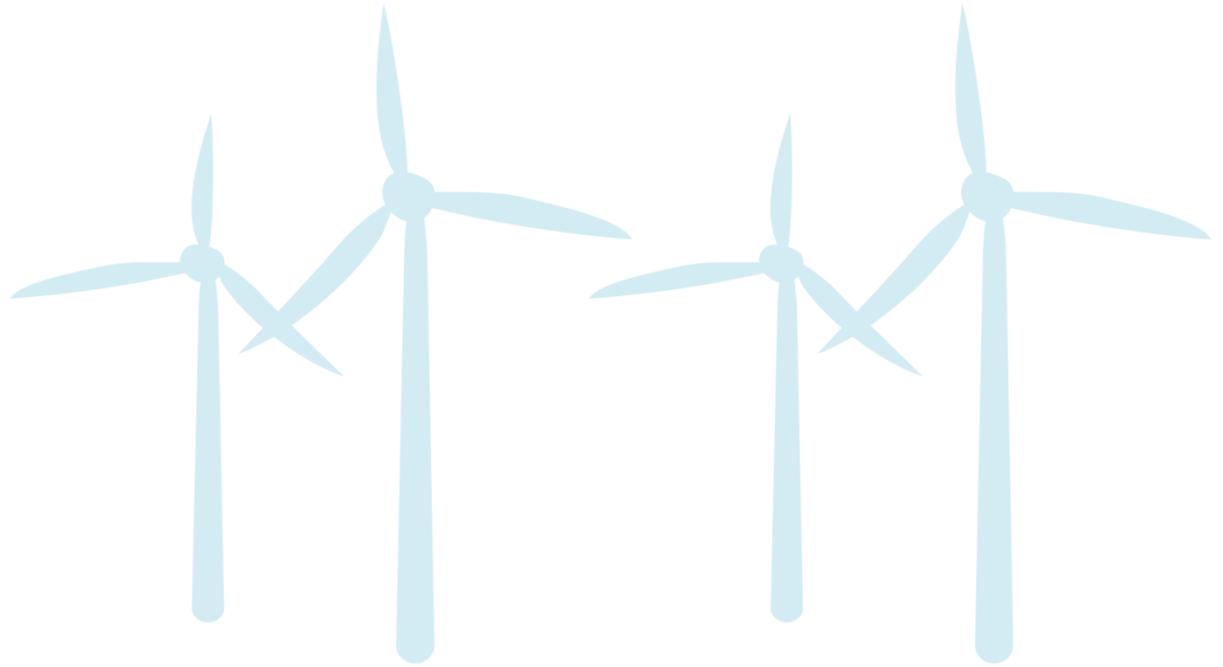
The Distributing Power report focuses on Thousand Flowers



# The Thousand Flowers Pathway

- Places civil society in a central role
- Develops a 'civic' energy sector
- Localises energy value
- Is a major transition, but no more major than privatisation and liberalisation
- Means new roles for local authorities and much deeper citizen engagement

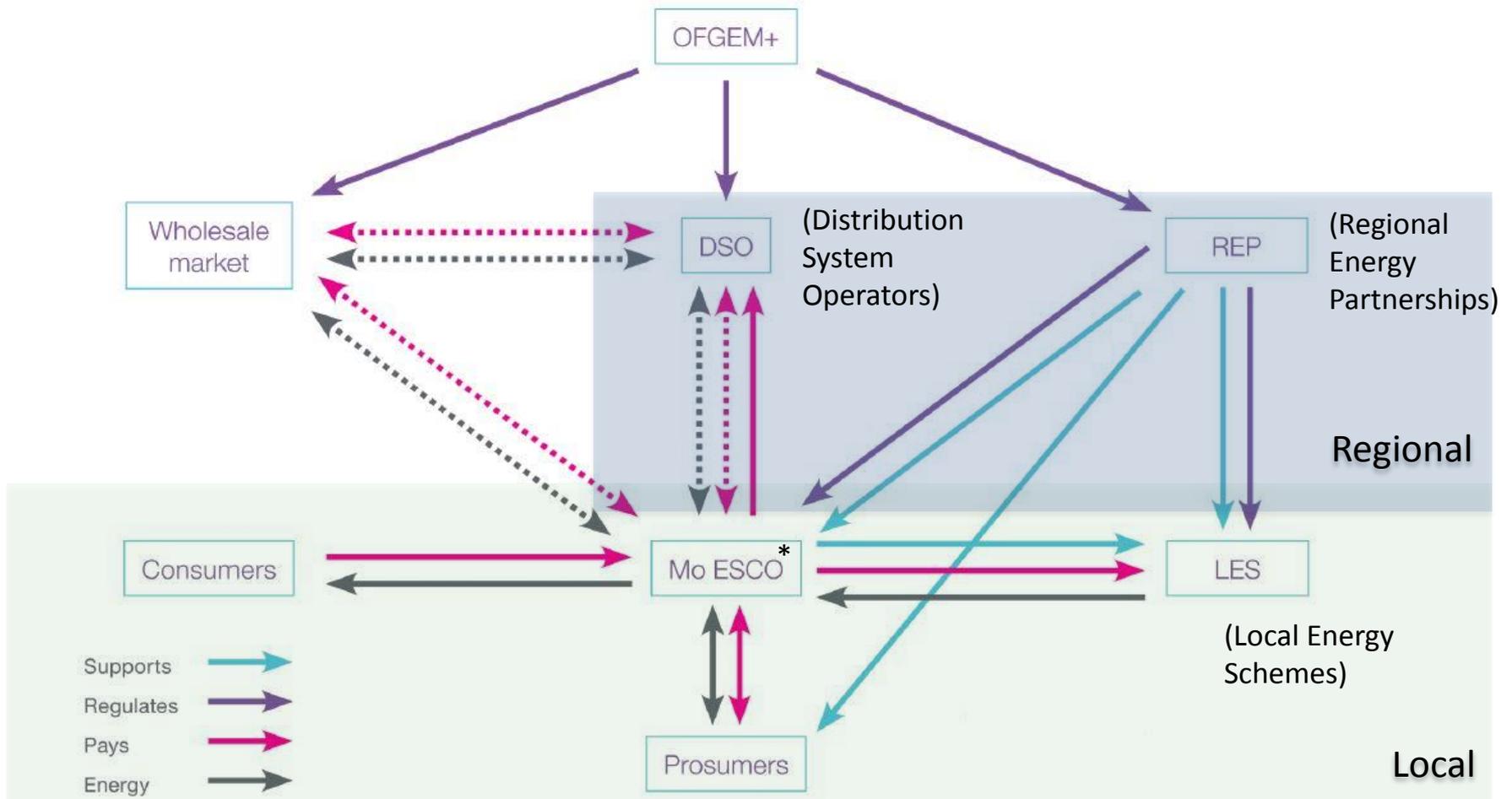
# HEADLINE MESSAGES



A distributed energy system opens up new avenues for financing the energy transition, but challenges incumbent utility business models.

- A system based on many small- and medium-sized producers reduces dependence on very large scale finance and investment in centralised generation.
- This opens the energy system up to investment from citizens, municipalities, SME's, and other new forms of finance. This increases the types of capital available to the energy system.
- At the same time, traditional utility business models face challenges from renewable generation and supply market share.

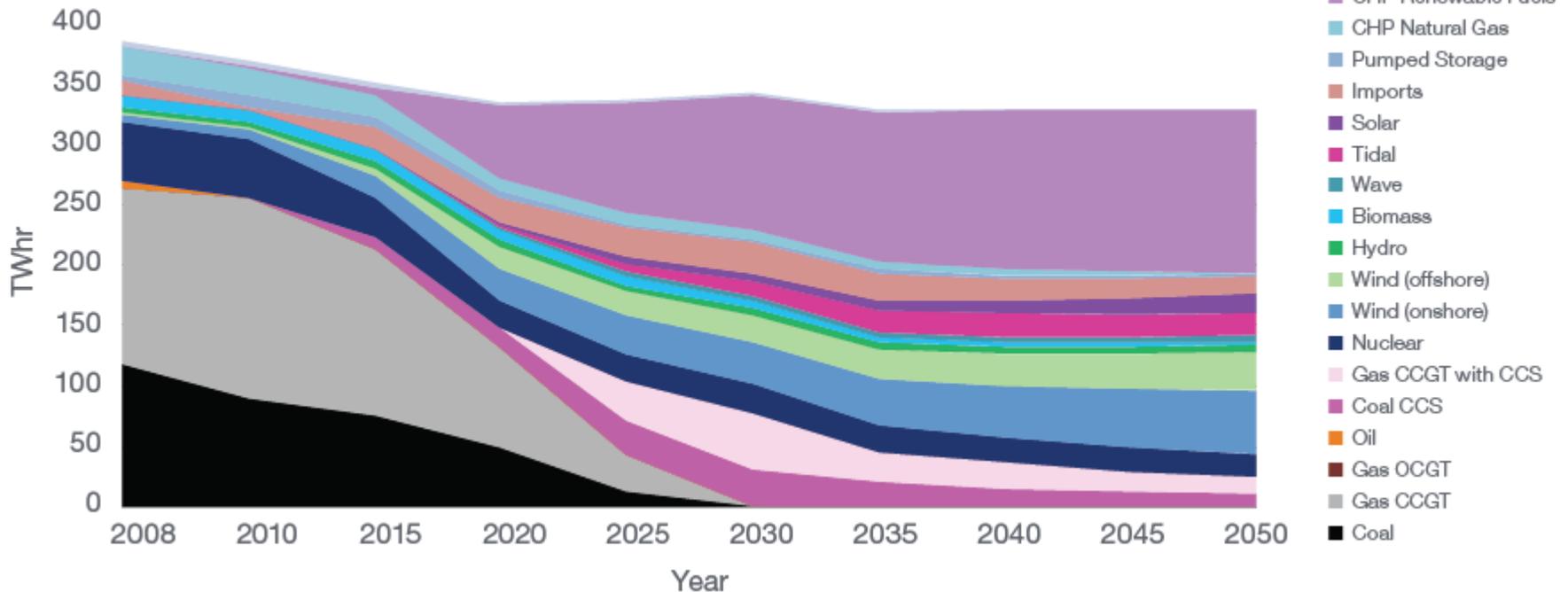
# A local and regional approach to distributed energy is vital.



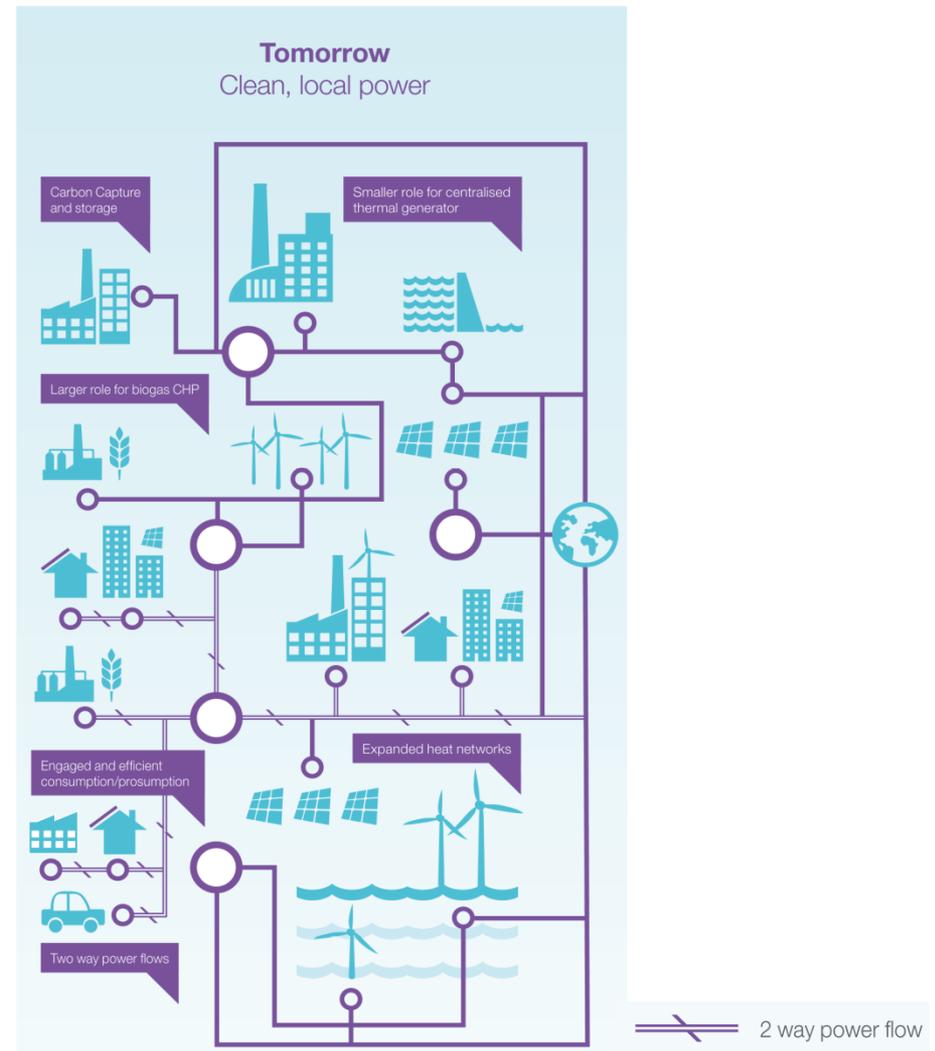
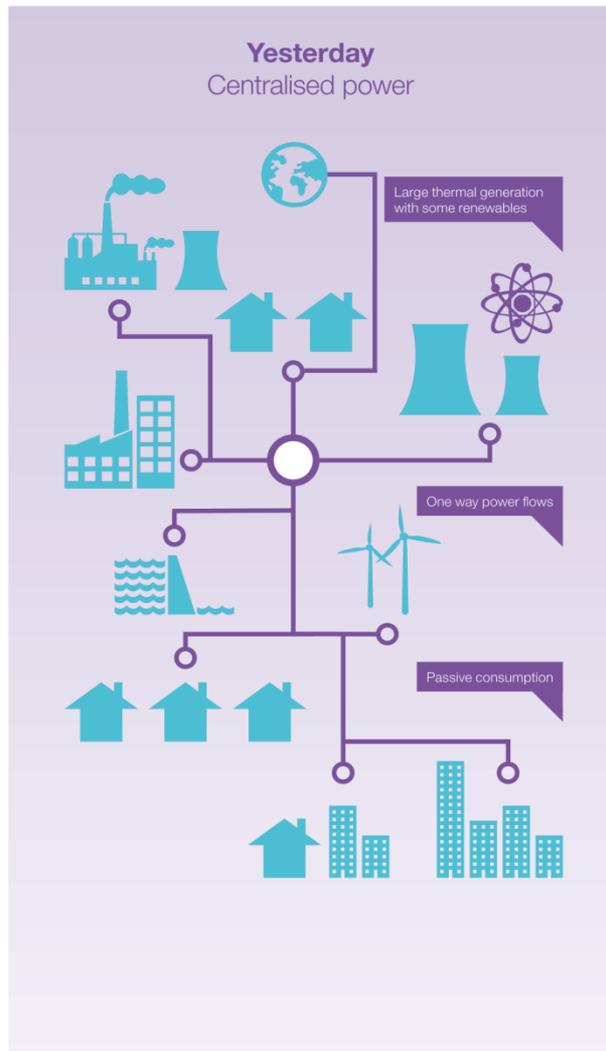
\*(Municipally-Owned Energy Service Companies)

It is possible to meet 50% of final electricity demand using distributed generation by 2050, but new infrastructures and emerging technologies are key.

Electricity Generation by Technology



All projections of the UK's energy future rely on some level of international interconnection and a distributed energy future is no different.



## The Thousand Flowers pathway relies on strong demand reduction and demand side participation and management

- Novel forms of user participation
- Pushing the boundaries of energy efficiency to 2050
- Energy system not an anonymous entity, but a critical infrastructure in which all actors play a role
- Successful initiatives equip the system with more flexibility
- Optimal use of the nation's wide renewable resources
- Resulting in large reduction in energy use, greater system resilience and better environmental performance



# Conclusions

- Examined the potential for a distributed energy future for the UK
  - investigated the technological trajectory it could follow
  - proposed an institutional architecture compatible with its development.
- **Defined a new understanding** of the potential for participation in the energy transition by actors who, in the UK at least, have played only a passive or marginal role in energy system change.
- We hope to have **contributed to the policy, academic, and practitioner debates** in a descriptive rather than prescriptive manner

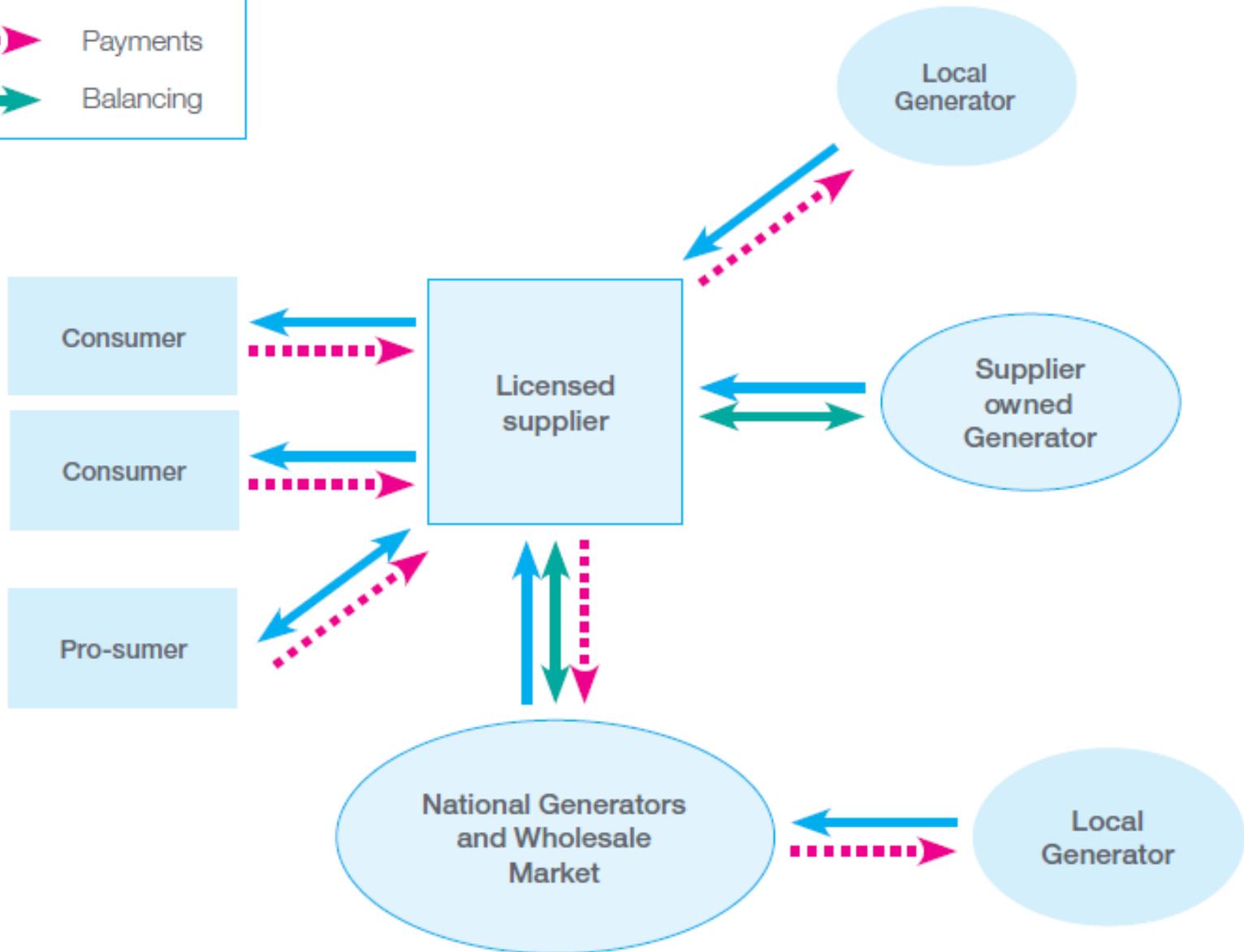
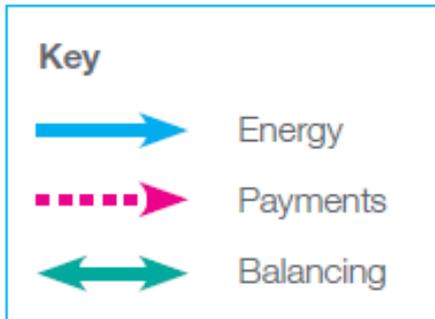
# Local Electricity Supply: Opportunities, archetypes and outcomes

Dr Stephen Hall  
and Dr Katy Roelich  
March 2015

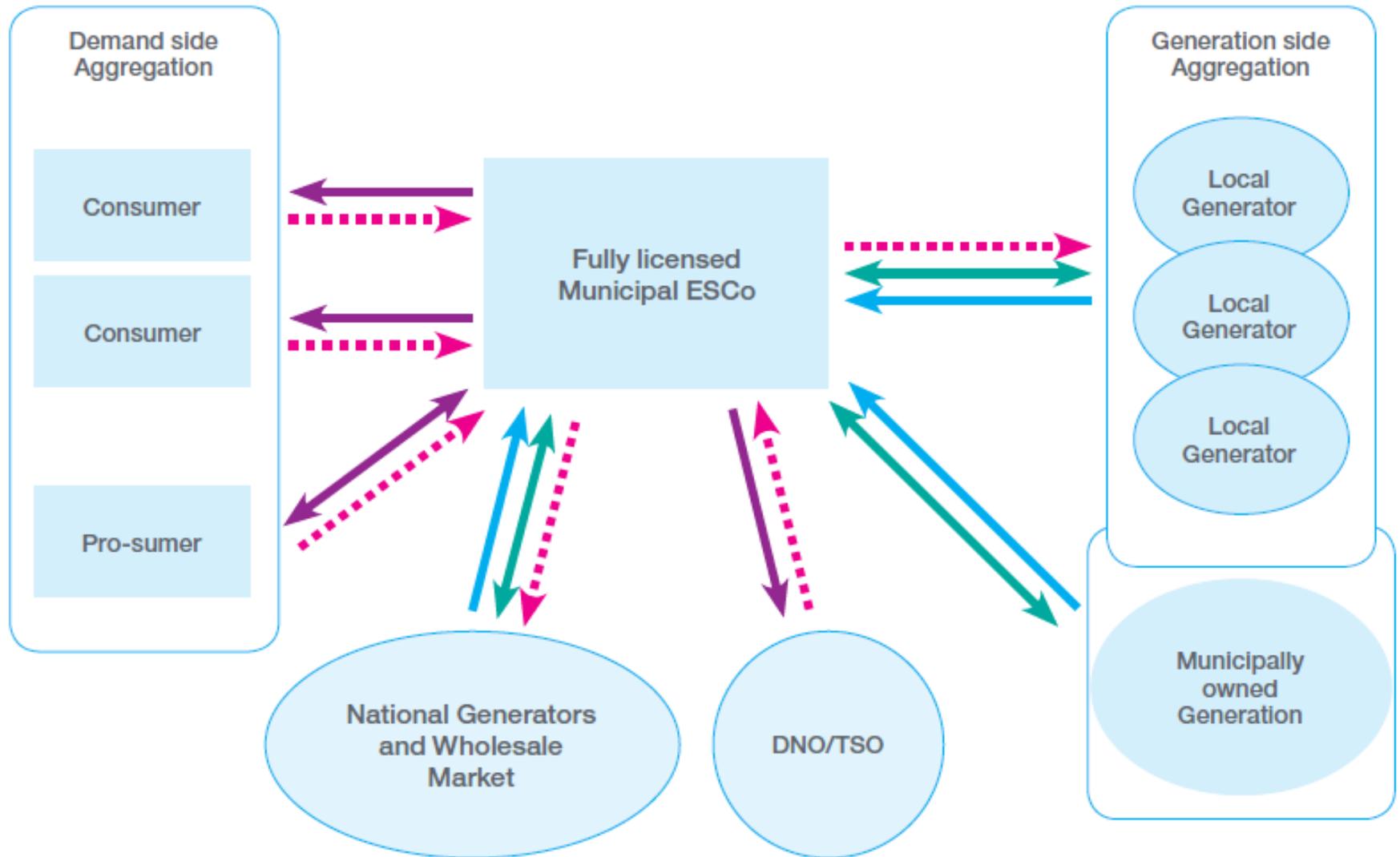


Area	Outcomes
Economic	Competitiveness and economic growth
	Job creation
	Revenue generation
Social	Fuel poverty reduction
	Regeneration
	Skills and education
	Social cohesion
	Fairness e.g. tariff discrepancy
Environmental	Carbon emissions reduction
	Air quality
Self-governance or self determination	Local accountability & control
	Energy independence

Diagram: The current archetype



**Key**



Archetypes	Enabling Mechanisms	Opportunities of local supply			
		Better routes to market for local generation	Fulfilling the potential of the demand side	Real energy efficiency gains	Re-localising energy value
Current Archetype	Full Supply License	--	-	--	---
Local White Labelling	Third Party Licensed Supplier Partnership (TPLSP)	+	-	-	-/+
Local Aggregator	TPLSP	++	+++	+	+
Local 'Pool and Sleeve'	License Lite with TPLSP	+	-/+	-	+
Municipal Utility	Full Supply License	+++	+	---	++
Municipal ESCo	Full Supply License	+++	++	+++	+++
MUSCo	Full Supply License	+++	++	+++	+
Peer to Peer	TPLSP	+++	-/+	-/+	+
Peer to Peer with Local Balancing Unit	TPLSP With local settlement unit	++	++	-/+	++

Archetype	Regulation	Capacity	Experience, replicability and risk
White Label	Low	Low	Low
Local Aggregator	Medium	Medium	High
Local Pool and Slewing	Low	High	High
Municipal Utility	Medium	High	High
Municipal ESCo	Medium	High	High
Multi Utility Service	High	High	High
Peer to Peer	Medium	Medium	High
Peer to Peer with Local Balancing Unit	Medium	Medium	High

- New *Civic* energy futures are possible
- *Civic* energy can be beneficial as well as disruptive
- Civic Energy is not business as usual
- New business models are just being tested
- Regulation is not the only, or even the main barrier.

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