

Local, regional and community energy systems: energy planning across scales

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With Prof Jan Webb and UKERC colleagues:
<https://ukerc.ac.uk/research/local/>



'Local Energy' flexibility...

- 'The local energy landscape is complex...a range of different links, relationships and interdependencies' (Scottish Government, 2021)
- 'Active citizens' to 'Active consumer/prosumers' (Devine-Wright, 2019)
- Energy planning as a route to explore decarbonised futures?
- UKERC research: LRES across Great Britain
 - 50+ LRES policies/strategies
 - 105 instruments
 - 68 interviews
 - Site visits and workshops

Local Energy Policy
Statement

January 2021



Policy mixes and institutions

- Lots of positives for Scotland
 - Policies – number, credibility, comprehensiveness
 - Intermediaries and institutional knowledge
- Statutory basis for Local Heat and Energy Efficiency Strategies (LHEES)

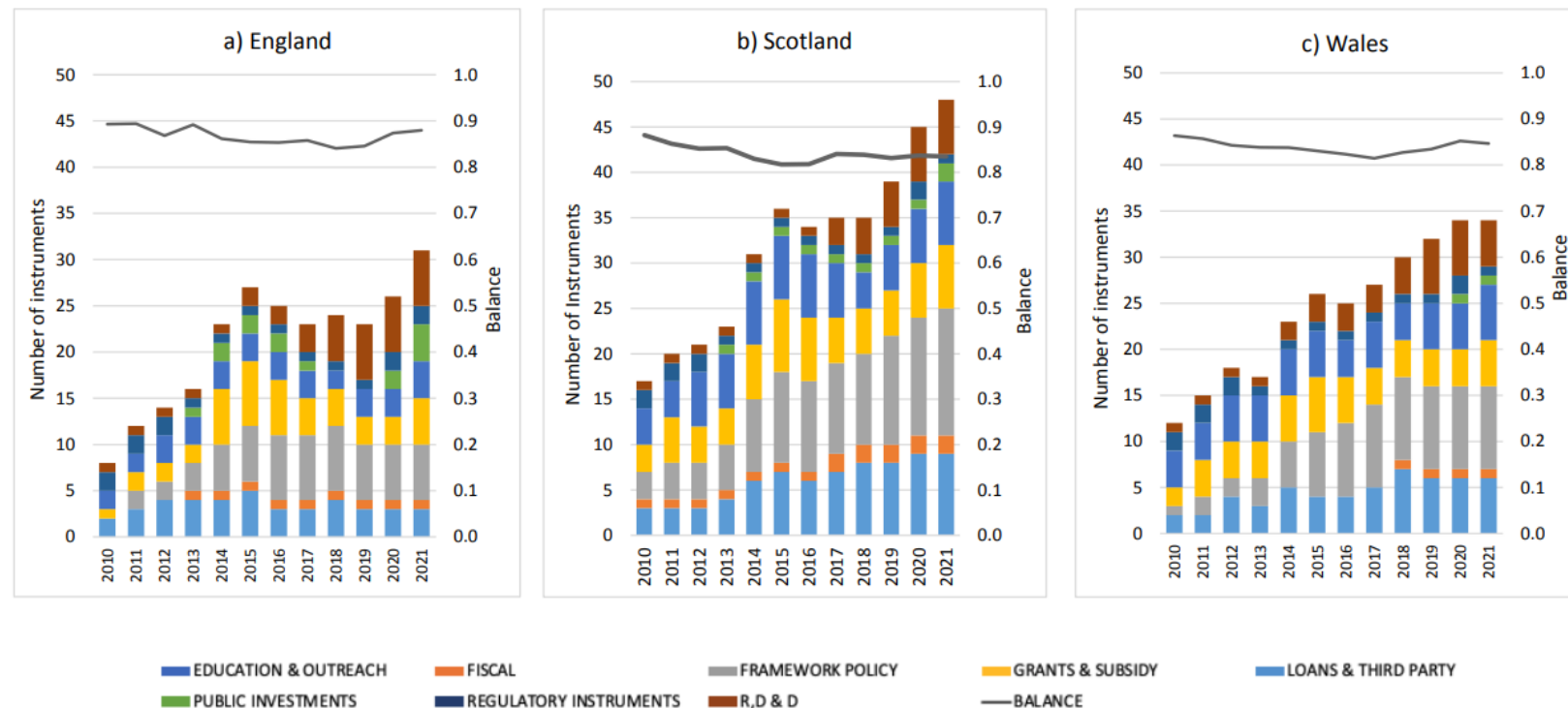


Figure 2. LES instrument mix and balance, 2010 – 2021, for a) England, b) Scotland and c) Wales

Local energy planning: opportunities and challenges

- Centrality of local authorities in understanding 'place'
 - LHEES building skills and relationships
 - But resource and capability challenges
- Practical challenges – data, standardisation, whole system planning in Scotland?
- Consultation over participation – a technocratic process?

'we don't have the capacity, the skill, the finance to expand at the rate we need to.'

'We need to piece this jigsaw of a smart local energy system together.'

'When it comes to actual delivery... nothing is going to happen unless we bring people with us.'

Planning for delivery?

- Energy planning as the start of a process....
 - Delivery plans are high-level to date
 - Granularity and prioritisation are essential to accelerate delivery
 - Investment pipelines and attracting private capital – GB learning
 - Whole system plans and informing electricity network planning/investment

‘a misconception emerged around LAEPs and LHEES, that they would give you a flood of projects...in practice it leads to the starting points of being able to identify projects.’

‘Planning and strategy is there, but the wider ingredients...regulation, delivery programmes, investment and funding, it’s not caught up yet.’

‘You’re at a risk of having a lot of stranded LHEES and a lot of stranded LAEPs because they don’t know what to do with this evidence’.

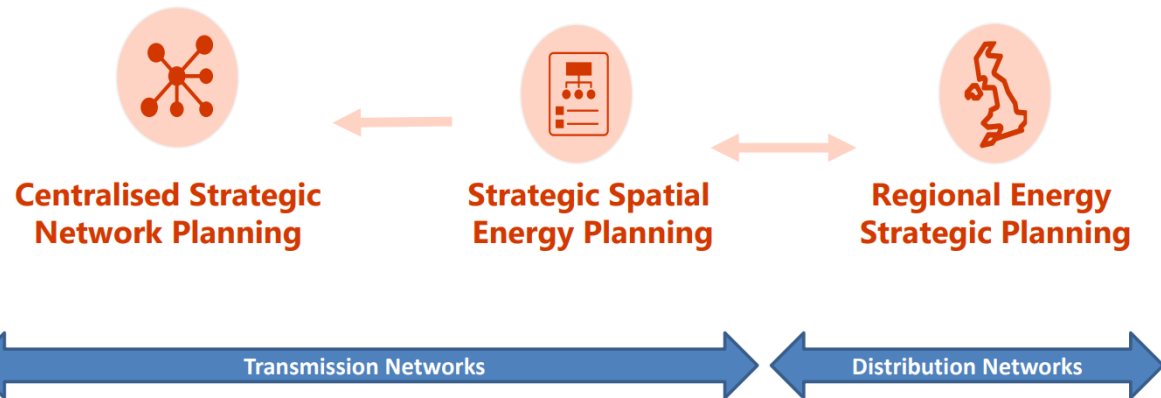
Regional Energy Strategic Planning: integrating across scales

National inputs:

- UK, Scottish, Welsh Gov net zero targets & plans
- CCC scenarios and analysis
- ESO Future Energy Scenarios
- CSNP and SSEP outputs

Regional and local inputs:

Network data	<ul style="list-style-type: none"> • GDN and DNO data – including units distributed, network capacity, connections and flexibility assumptions. • Independent DNO and Independent Gas Transporter data. • Transmission Operator asset availability data.
Local government data	<ul style="list-style-type: none"> • Heat network zoning data. • Housing stock data. • Investment plans. • Local and community energy projects. • Local Area Energy Plans (LAEPs). • Local Plans. • Local Heat and Energy Efficiency Strategies (LHEES). • Local Transport Plans. • Net zero targets. • Regional energy and industrial strategies.
Other sources	<ul style="list-style-type: none"> • Electrical vehicle ownership data. • Heat Pump ownership data. • Transport, water and telecommunications strategies and plans.



Introduction to NESO




ofgem

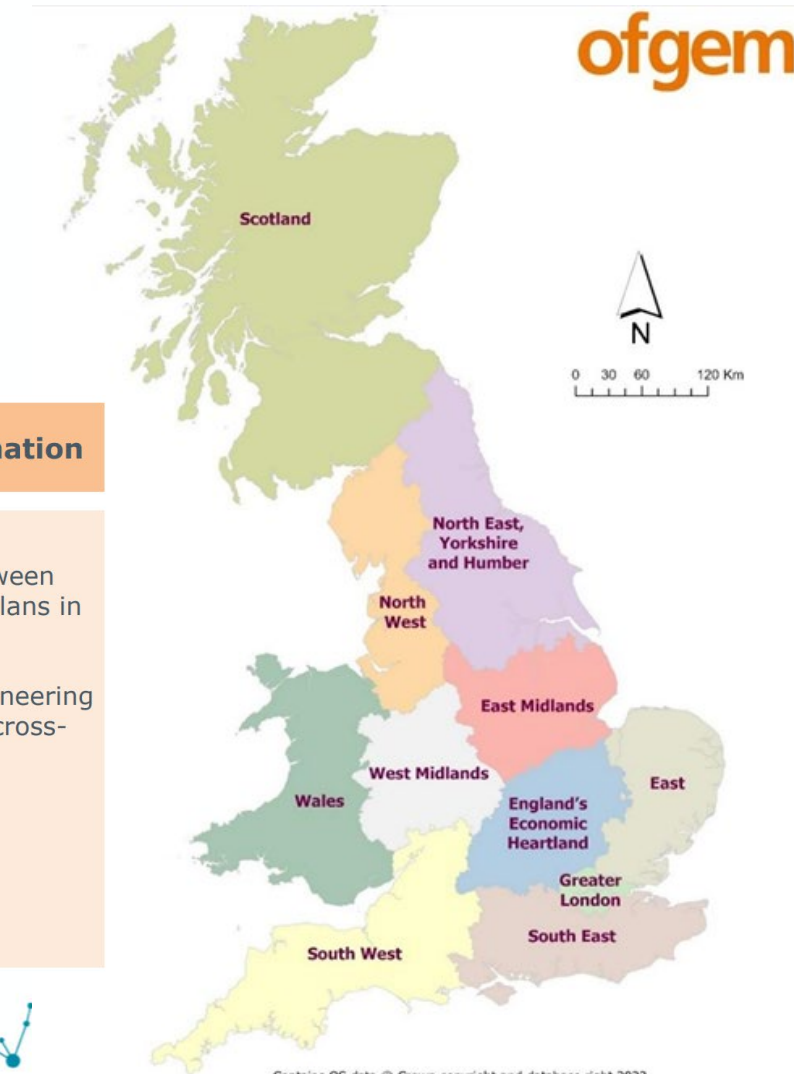
ESO

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Scottish questions

- One Scottish 'region'?
- Representation on strategic board(s)?
- Implications of diverse local approaches across GB?
- Managing uncertainties?

Modelling supply & demand	Identifying system need	Technical coordination
<ul style="list-style-type: none">➤ Long-term vision for region➤ Directive pathways to model energy supply and demand growth➤ Annual data refresh and full update to pathways every 3 years 	<ul style="list-style-type: none">➤ NESO Hub develops consistent planning assumptions➤ Spatial view of growth projections against network conditions➤ Identify location for strategic investment in line with the long-term vision 	<ul style="list-style-type: none">➤ Resolve gaps and inconsistencies between network company plans in a region➤ Whole system optioneering to support specific cross-vector challenges 



Conclusions

- Increasingly decentralised and complex energy systems require new roles and relationships
 - Emphasis on the need to coordinate across scales
- How manage the patchwork of planning approaches across GB and ensure local plans carry weight
- Multiple delivery challenges
- These are political as well as technical/economic questions



 Making a positive difference for energy consumers	
Consultation	
Regional Energy Strategic Plan policy framework consultation	
Publication date:	30 July 2024
Response deadline:	8 October 2024

References and links

- <https://ukerc.ac.uk/publications/energy-modelling-across-scales-workshop-summary/>
- <https://ukerc.ac.uk/publications/planning-works-local-energy-planning-to-accelerate-net-zero/>
- <https://ukerc.ac.uk/publications/institutional-landscapes-for-local-energy-systems-mapping-england-scotland-and-wales/>
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- <https://ukerc.ac.uk/publications/modelling-interactions-energy-systems/>
- <https://ukerc.ac.uk/research/modelling/>
- <https://www.ofgem.gov.uk/consultation/regional-energy-strategic-plan-policy-framework-consultation>
- <https://www.gov.scot/publications/local-energy-policy-statement/>
- Devine-Wright, P. (2019). Community versus local energy in a context of climate emergency. *Nature Energy*, 4(11), 894–896. <https://doi.org/10.1038/s41560-019-0459-2>
- Britton, J., & Webb, J. (2024). Institutional work and social skill: the formation of strategic action fields for local energy systems in Britain. *Environmental Innovation and Societal Transitions*, 50, 100789. <https://doi.org/10.1016/J.EIST.2023.100789> (Open access)