BRIEFING

EnergyREV

Describing a local energy business sector in the United Kingdom

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Highlights

- Describing or characterising the current state of UK local energy businesses is a first step towards assessing the sustainability benefits of decentralised, integrated energy systems, including their decarbonisation potential. It is key to understanding the current condition and shape of the sector, as well as supporting future innovations for a more decentralised, clean, affordable, resilient, and democratic UK energy system.
- A local energy sector characterisation needs to consider not only how 'local', but also how 'smart' such businesses are, with digitalisation a key factor.
- We have taken a first step with the development of a qualitative scale that covers 4 levels of localism and 5 levels of smartness.
- There are more local businesses than there are smart. In our sample of 699 businesses 184 showed the highest level of localism. Only 21 have reached Level 2 of 5 when it comes to smartness.
- Private, public, and community-oriented sectors are integral to developing more local and smarter energy businesses.
- Transition is happening slowly towards a more local but also smarter energy business sector, with diverse energy businesses addressing decarbonisation, decentralisation, digitalisation, and democratisation,

Summary

More localised energy businesses are developing in the UK, albeit slowly. Insight into the sector and its future potential requires both a clearer picture of its current structure and composition, and some shared definition criteria. Estimates of how 'local' and 'smart' businesses are can lead to these shared definition criteria. Together these can support sustainable growth of a more local, and even smarter energy sector.

Using the elements of localism and smartness, we developed a qualitative scale. We mapped UK local energy businesses in a database of 699 companies in order to further characterise the sector.

The scale includes the following levels:

For Localism:

Level 0 – Stand-alone: No identifiable links or involvement with the community and/or other local stakeholders.

Level 1 – Participation: participation in specific initiatives with communities and/or stakeholders. This localism is defined as:

- participation in a project;
- decision-making or
- asset ownership.

At this level, these are diffused, isolated, not clear, or not part of formal goals. Only one element (out of the three) is usually present.

Level 2 – Involvement: a degree of involvement with communities and/or stakeholders through participation in projects, decision-making or asset ownership. Two elements (out of the three) are present.

Level 3 – Engagement: deeper engagement with communities and/or stakeholders through participation in projects, decision-making and asset ownership. All three elements of localism are present

For Smartness:

Level 0 – Minimum: The level of information and communication technologies is minimum or under development. Data are not gathered and used in real-time.

Level 1 – Baseline: The level of information and communication technologies allows the use of data in real or near real time for business decision-making.

Level 2 – Improved: In addition to basic information and communication technologies, the business can respond by automatically or semi-automatically optimising service provision.

Level 3 – Advanced: In addition to real time data, and automated adjustment of operations, the business is able to use data to engage users in decision-making, planning and/or governance.

Level 4 – Smart: The business is capable of collecting and using data in real time, automatically optimising services and engaging users, by having some degree of embedded machine learning or artificial intelligence.

Localised businesses include a mix of public, private, and third-sector actors, with varied revenue sources. These include, among others:

- sales of electricity and gas to the grid;
- (on-site) heat and power services;
- Feed-in-Tariffs;
- biofertiliser production;
- food and general waste management.

We found mixed levels of localism, with 184 showing the highest level of localism and 237 showing the lowest. The situation was different when it came to smartness. Only 21 businesses showed Level 2 of smartness, the highest attained of 5 possible levels. But there are signs of innovation in the way businesses address decarbonisation, decentralisation, digitalisation, and democratisation. These include businesses with a wider supply chain coverage, such as waste-to-energy projects, (on-site) heat and power services, or biodigestors which collect and treat their "raw material". Spin-off businesses, such as biodigestors which produce biofertilisers or a pumped storage plant that also runs as a tourist attraction are other examples.

Based on estimates of how 'local', and 'smart', these businesses are, we characterise a small, but diverse, sector. Many new entrants include farmers, universities, community groups, trusts and foundations, and municipalities. Almost a half of the companies included in our sample are described as small based on their average assets.

There is significant scope for developing the sector further to offer pathways to more local, smarter energy businesses capable of accelerating decarbonisation. These include:

- real-time management of energy use
- customised engagement using machine learning
- new ownership and decision-making structures
- more innovative corporate structures and integrated energy services combined with new financial instruments.

Policy recommendations

1. Further develop criteria for establishing a local energy business sector. Such criteria should help formulate more coordinated policies, and measures to promote sustainable growth of the sector.
    - » **Option**: A sectoral survey building on our methodological approach, including more quantitative elements, such as an online or telephone survey to examine main business characteristics and aspects of localism and smartness in more detail, with effective participation of a representative sample of local energy businesses.
2. Establish policy support for investment in local energy businesses that provide innovative clean energy services.
    - » **Option**: Specific tax exemptions or benefits for investors willing to devote money to local (and smart) energy projects aiming to benefit localities or communities via local employment, community funds, local integrated/cross-vector energy services, decarbonisation of a specific area, etc.
3. Consider a unified financial, business disclosure regime to support transparency, informed policy and effective development of the sector.
4. Devise policy to support integrated smart, local systems with a local stake in clean energy.
    - » **Option**: Map areas of the UK with potential for integrated smart, local energy initiatives, which can be further developed through roadshows with investors, local authorities, community groups, financiers, etc.

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About EnergyREV

EnergyREV was established in 2018 (December) under the UK's Industrial Strategy Challenge Fund Prospering from the Energy Revolution programme. It brings together a team of over 50 people across 22 UK universities to help drive forward research and innovation in Smart Local Energy Systems.

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