

3 Bristol's Energy Ecosystem

3.1 Background to the city of Bristol

Bristol is one of the UK's Core Cities with a population of around 500,000. It is the largest city in the South West of England and, along with the neighbouring authorities of Bath and North East Somerset (BaNES) and South Gloucestershire, it is a member of the West of England Combined Authority (WECA).

Bristol was the first local authority area to declare a climate emergency in November 2018 [24] and has set a target of carbon neutrality by 2030. Actions against this ambitious target have been developed through a series of workshops, consultations, reports and analyses.

Preceding the declaration, the city council had already published other climate and energy strategies, notably 'Our Resilient Future: A Framework for Climate and Energy Security' (2015) [25].

From the business perspective, Bristol was recently named as the UK's most productive technology cluster. One third of the FTSE 100 companies have a base in the region. It was named as one of the top ten city regions in Europe by The Financial Times and the highest performing 'Core City' in England.

At the same time, the city faces many systemic challenges; the disparity in accessing higher education is almost 80% between local government wards and nearly 16% of Bristol's population live in deprived areas. This means that access to technology, training and opportunity is very uneven.

Bristol is the home of a number of national 'green' organisations, such as Sustrans (the Centre for Sustainable Energy, The Soil Association), amongst others. It also has a strong community energy sector working alongside some significant anchor organisations across the neighbourhoods of the city.

Bristol's energy approach is widely distributed with many small initiatives taking root around the city. This is partly due to a strong community ethos and well-established community energy groups. The city council is also very active, with an energy service employing around 40 people, which is significantly more than most other local authorities.

The "Energy Service", whilst part of the city council, also sits at arms-length and is connected to Bristol Energy which was set up as a wholly-owned energy supply company. The idea behind this was to deliver better energy products to the city (and beyond) with a strong innovation team exploring smart energy approaches.

There are also two universities in Bristol, and a range of small technology companies or arms of larger businesses, alongside green builders and entrepreneur social enterprises.

3.2 Energy stakeholders

There are numerous organisations across the city which are involved in developing SLE SoS approaches. The full listing of organisations that we have either engaged with or researched for this case study is provided in Appendix B. The grouped categories of such organisations are discussed below:

3.2.1 Community

Community Energy Groups

There are several city-wide community-focused organisations operating in the non-profit space, with a small number of paid staff. These are the organisations that have started to scale up successfully and develop business models which are increasingly less reliant on grant funding. Examples of this include: Bristol Energy Network (BEN); Bristol Energy Co-operative (BEC); Cold Homes Energy Efficiency Survey Experts (CHEESE).

At the neighbourhood and community levels, there are community energy organisations and other community groups which are developing hyper-local approaches to energy management and are working on a voluntary basis. An important function at this level is engagement and the buy-in of the local communities. These groups are connected together, and also to larger organisations, through the Bristol Energy Network which forms an ‘umbrella’ and has been instrumental in helping to facilitate connections and supporting the upscaling.

Examples of this include: Bedminster and Fishponds energy groups, Bishopston, Cotham and Redland Energy Group and ReWork in Knowle West.

Anchor organisations

Beyond energy groups, the city has an extensive network of local and ‘community anchor’ organisations. These perform a multiplicity of roles to meet the needs of their communities and have an important place in the city’s ecosystem for reaching and engaging with citizens through connections of place or interest. Prominent examples of anchor organisations embracing community energy are Ambition Lawrence Weston (ALW), and the Hartcliffe and Withywood Community Partnership (HWCP).

3.2.2 Non-governmental organisations

Non-profit and Charitable Organisations

Bristol is strongly represented in the NGO space with the Centre for Sustainable Energy (CSE) being a notable energy organisation. CSE has grown from its founding as the Centre for Urban Technology in 1979 to an organisation of around 70 employees. Although CSE operates nationally, it is strongly rooted in Bristol and works to address fuel poverty, energy efficiency and other aspects of the energy system. Regen, which is a not-for-profit centre of energy expertise and market insight whose mission is to transform the world’s energy systems for a low carbon future, also works at both a local South-West level and nationally from its base in Exeter.

Sustrans is another national organisation with a strong Bristol presence. It was founded to develop and promote sustainable transport, and it now manages a national network of cycle routes and collaborates with other city partners to improve the uptake of walking and cycling and reduce vehicle carbon emissions.

Education

Tertiary education in Bristol is represented by two well-regarded universities (the University of Bristol and the University of the West of England). There are seven FE colleges serving the Bristol area (including one in Bath and one in Weston super Mare), alongside 12 school-based sixth form centres. Additionally, there are a range (a total of 36 are listed) of post-16 training providers which are recognised by BCC as providing short courses, apprenticeships and trainee placements.

3.2.3 Local Government

Local government, here represented by the Bristol City Council (BCC), is a key component in a city (or regional) approach to SLE SoS. Bristol has taken a proactive approach by developing the Energy Service team which has around 40 employees. The Energy Service was initially established through the European investment funding ELENA - *European Local ENergy Assistance* - run by the European Investment Bank, to 2015. It now aims to set up a city-wide approach to energy generation and efficiency. Alongside this team, other parts of the city council are also important, e.g. the innovation and sustainability teams, planning, estates, and property and finance. Bristol has an elected mayor and cabinet, alongside the elected councillors representing different wards of the city.

A further layer of local government comes from the West of England Combined Authority (WECA) with an elected West of England Mayor, alongside the Local Enterprise Partnership (LEP).

Within these structures, some energy responsibilities sit at a city level and some in the region. Notably, WECA has powers over spending on the region's transport, housing and adult education and skills.

The South West Energy Hub (one of five hubs across England) covers seven LEP areas from Swindon to Cornwall and is funded by BEIS (The Department for Business, Energy and Industrial Strategy). WECA is the lead partner and hosts the hub team of 8 in the Bristol office. The aim of the Energy Hub is to [26]:

“encourage investment into energy infrastructure, connect local institutions and share best practice across the five Hub regions to increase the number, scale and quality of energy projects. Projects supported by the Energy Hub will improve the way that energy is used, supplied or distributed.”

3.2.4 Business

The business category encompasses a whole range of for-profit organisations, from big multi-nationals operating in the city to sole traders, and from energy supply to finance, to technology, and to building. Below is a short summary and examples across this spectrum.

Energy supply and distribution companies

In (and around) Bristol, there are several energy supply companies: **Bristol Energy** (BE) was the wholly-owned energy company set up by BCC in 2015, although it was recently sold to Together Energy after failing to make a profit. BE had an order book of approximately 155,000 customers of whom around 20% were local to the Bristol area. **Ovo** energy, meanwhile, has grown substantially over the 10 years since its founding, absorbing SSE (and 3.5 million new customers) in 2020.

Beyond Bristol, yet still based in the region, are the green energy pioneers of **Ecotricity** in Stroud in Gloucestershire, and **Good Energy** in Chippenham in Wiltshire.

Western Power Distribution (WPD) is the network operator for the Bristol area, playing a key role in the SLE SoS transition as it also moves from the traditional role of Distribution Network Operator (DNO) to Distribution System Operator (DSO). WPD manages the electricity supply network, connections and capacity.

Clean Energy development

Clean energy development covers a spectrum of activity from large-scale renewables to micro-grids to batteries. **CEPRO** has been operating in the Micro-grid space for a while, although it is largely reliant on grants.

At a more commercial level, **Aura** power is based in Bristol and is a global developer of renewable and clean energy projects. Aura has two energy storage projects in Bristol, namely 15MW in Lockleaze and 20MW in development at Feeder Road.

DNV-GL is also a global company which includes Garrad Hassan, one of the pioneers in wind energy technology and design.

Bristol is also home to several solar installers such as **One World Solar**.

Technical Innovation Companies

Alongside these more traditional players in the energy sector, a number of technology companies, including start-ups, each have a role to play in developing the ‘smart’ side of local energy systems. As an example, we have seen a number of different organisations in the REPLICATE project, such as the **Bristol Toshiba innovation lab**, in transport **Esoterix**, and the University of Bristol and BCC co-developed *Bristol is Open* (BIO) initiative (which, since September 2020 has been wholly owned by the BCC).

Energy Efficiency and Retrofit

Energy efficiency plays an important part in the energy ecosystem, both in terms of building efficiency and human behaviours (see community above).

In the retrofit sphere, a number of local eco-retrofit companies are key, alongside the **Green Register**, which brings these builders and architects together and provides training. It has also recently started to provide certification of retrofit trainers through its Futureproof project.

Many building companies are micro SMEs, i.e. sole traders or businesses which have two or three people working for them. “They’re not big companies, but they are the sort of people that do most house refurbishment projects” [P7]. There are particular challenges in engaging and upskilling this distributed workforce for domestic retrofit. Also in this category are electricians, plumbers, other building trade-workers and solar installers, etc.

For new builds, national housing developers have generally been slow to engage in anything beyond building regulations. However, there are smaller developers who are experimenting with low carbon developments e.g. **Bright Green Futures**, which is working on building housing estates with their own microgrids (e.g., Waterlilies microgrid) and fostering self build and **Greenheart**, which specialises in near-Passivhaus new builds.

Transport

Alongside energy supply and domestic usage, transport plays an important role in the energy system with efficient transport planning, access to real time public transport information and electric vehicle charging being amongst the local initiatives. Some examples of innovations in this sector include Bristol’s **First Bus**, which has been running a city-wide bus service operated on biofuels, and **Travelwest** which provides a comprehensive repository of travel advice and includes journey planning to show the sites of car clubs and charge points.

City car clubs³, including electric vehicles, have hourly hires available across the city, mostly in the central and Northern areas. There are 3 operators, **Enterprise**, **Zipcar** and **Co-wheels**. Most of the centrally located hire cars are co-located with their own charge points.

Legal and Planning Support

³<https://journeyplanner.travelwest.info/?poi=carClubs>

The Law firm, **TLT**, has developed expertise in the clean energy sector and has organised, hosted and sponsored numerous events to support the industry, as well as providing advice across the range of technologies ⁴. This company was also involved in the Avonmouth battery project.

Bevan Britton, Burgess Salmon and others also use their company Corporate Social Responsibility commitments to provide pro-bono support for non-profit parts of the local energy system.

Finance

Bristol hosts **Triodos** Bank UK, which is recognised as one of the most ethical and sustainable UK banks. Triodos works with local organisations such as BEC (4.2MWp solar PV at Lawrence Weston) to support financing for the local energy system.

Thrive Renewables, based in Bristol and formerly part of Triodos, provides a platform for investment funding by individuals into clean energy projects. Avonmouth Wind Farm (four turbines) is a Thrive-supported project.

Bristol and Bath Regional Capital CIC is supported by the universities, voluntary sector and BCC, and seeks to connect enterprise with investment.

3.3 Bristol Policies for Energy

As already noted, Bristol is known for being at the forefront of the local authority energy activity in many areas and has produced a number of plans over the last 10 years at least to drive sustainability and responses to climate change as well as incorporating these into other core strategies.

3.3.1 One City Plan, SDGs and Climate

Bristol's One City Plan ⁵ was launched in 2019, and it takes a year by year look at how city partners will work together to create a 'fair, healthy and sustainable city'. This is the key strategy document shaping the city's activities for the future with a cross-city sign up by partners including and beyond the city council.

The One City Plan was developed through extensive consultation with citizens and stakeholders and is meant to provide a collective vision for organisations and individuals across the city, rather than serving as a plan for city government alone. A commitment to the UN Sustainable Development Goals (SDGs) is integrated into this plan and Bristol, as a city, is a signatory of the global SDGs. The Bristol SDG Alliance has undertaken the UK's first Voluntary Local Review of SDG progress. The review has assessed progress against all 17 SDGs and includes data from over 140 indicators. It reflects a whole city approach to tackling the SDGs, making links to the One City Plan as the core city document ⁶.

In taking the One City Plan and climate strategy forwards, cross-sectoral boards have been set up to lead on different aspects of the plans, monitor progress and bring actions together.

3.3.2 City Council Plans: SLES Impact

The Corporate Strategy (2018-2023) sits within the context of the One City Plan and sets out the council's own ambitions and objectives for the period.

⁴<https://www.tltsolicitors.com/expertise/sectors/energy-and-renewables/>

⁵<https://www.bristolonecity.com>

⁶<http://www.bristolonecity.com/sdgs/>

The Corporate Property Strategy 2020-23 covers land and building management; Bristol City Council owns a significant amount of property and, by area, owns approximately 40% of the land in the city. A significant part of this is controlled by third parties under long term leasing arrangements. Operational property includes around 2600 hectares of land and 733 buildings (e.g. schools, libraries, offices and depots) ⁷. One of the six visions in the strategy says: *'our estate leads by example in the contribution it makes to making Bristol carbon neutral and climate resilient by 2030'*.

The Transport strategy ⁸ covers all aspects of transport and has, at its core, aims to improve the city's connections, reduce inequalities and improve sustainability. It says: *"The use of technology to help us move around has increased rapidly and will continue to do so. Technology is helping people to make their journeys door-to-door in a seamless way through measures such as journey planning tools, smart ticketing and mode sharing apps that allow citizens to access various modes of transport, reducing the need to own individual cars. We will embrace the use of technology that enables more efficient movement around our city and this is embedded throughout this strategy."* The Smart city strategy ⁹ 'Connecting Bristol' also talks about inclusion, which places people at the core of smart activity in the city.

⁷<https://www.bristol.gov.uk/documents/20182/4565824/Corporate+Property+Strategy+2020-23.pdf/3a0c2739-1e6a-b101-092a-ea37eed149b3>

⁸<https://www.bristol.gov.uk/policies-plans-strategies/bristol-transport-strategy>

⁹https://www.connectingbristol.org/wp-content/uploads/2019/09/Connecting_Bristol_300819_WEB.pdf