



**Liverpool City Region**  
All Party Parliamentary Group



UNIVERSITY OF  
**LIVERPOOL**

Heseltine Institute for Public  
Policy, Practice and Place

## Liverpool City Region All-Party Parliamentary Group

### Research Paper No.2

## Fairness, resilience and prosperity: addressing energy and net zero challenges in Liverpool City Region

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### Introduction

The current global energy crisis has been described as the most serious since the Middle Eastern oil crises of 1973 and 1979 (Economist, 2022). While the short term impacts are currently being felt by consumers, the longer-term implications for the sector and the transition to net zero are still to be played out. Speaking at the World Economic Forum in Davos (May 2022), Fatih Barol (Executive Director of the International Energy Agency), noted:

"We don't need to choose between an energy crisis and a climate crisis – we can solve both of them with the right investment."

In this context, the UK faces a multidimensional energy challenge across three main fronts:

- *Energy security* is threatened by global political and economic trends disrupting energy markets, principally the Ukraine-Russia conflict but also China's pivot to a more aggressive foreign policy and continuing uncertainties about the political stability of several Middle East nations. Within the UK, the complex network of energy generators, distribution networks and suppliers (part public, part private) is vulnerable to increases in energy costs, as evidenced by the failure of several energy suppliers over the last 12 months.
- The *cost of living* crisis is driven largely by the rising cost of wholesale energy, caused by supply shortages and the fallout from the Russian invasion of Ukraine. It has led to significant increases in the cost of domestic and industrial electricity and gas, petrol, and food. While inflation is negatively impacting household finances across the income spectrum, its effect is most marked on the poorest as the bottom 10% of households in terms of income spend almost three times as much of their budgets on gas and electricity than the highest income 10% (IFS, 2022).
- *Climate change* presents a threat not only to the global ecosystem but to people, businesses and institutions in the UK. The UK's Climate Change Committee (CCC) reports that this threat includes risks to agriculture, from flooding, and from increased exposure to heat (CCC, 2021). The UK is committed, through a 2019 amendment to the 2008 Climate Change Act, to achieving net zero greenhouse gas emissions by 2050.

In Liverpool City Region (LCR), these challenges are particularly acute. A survey carried out by the LCR Combined Authority engagement team in April 2022 found 77% of respondents had been negatively impacted by rises in the cost of living, with 61% citing energy price rises as the expense that had increased the most. Fuel poverty was already a problem in LCR before the recent rise in inflation, with 15.8% of households across the region classed as living in fuel poverty in 2020 (ONS, 2020).

Climate change also presents a specific risk to LCR as a coastal region – researchers from Liverpool John Moores University estimate a 1.5°C temperature increase would lead to flooding in large parts of Wirral, Sefton and Liverpool (LJMU, 2016). In response to this threat, LCRCA has established a target to become a net zero city region by 2040 – 10 years ahead of the UK target. This is an ambitious task which will require extensive co-ordination of public, private, industrial and domestic energy use and generation.

This paper highlights some of the challenges and opportunities associated with tackling the issues identified here, centred around three key themes:

- **Fairness:** tackling the energy-led cost of living crisis and ensuring the transition to net zero is achieved in a just and reasonable way.
- **Resilience:** building a resilient energy generation and distribution network that can withstand external shocks.
- **Prosperity:** ensuring that the opportunities that will arise from the transition to net zero, through jobs and growth, are available to residents across LCR.

## **Fairness**

The current energy crisis is severely impacting many low income households. According to a new report by the Joseph Rowntree Foundation (JRF 2022):

- Over 5 million households in the UK have either cut down on food or skipped meals in the last month;
- Over 3 million households have been unable to adequately heat their home since the start of this year;
- 4.6 million households are in arrears on at least one bill such as rent, council tax or utilities;
- Low income households in the UK have taken on £12.5bn of new debt this year, much of it owed to doorstep loan companies and buy now, pay later providers.

Fuel poverty is driven not only by energy prices but also poor housing stock. In LCR, more than half of all private home were built before 1940. 60 per cent of properties have an Energy Performance Certificate rating of D or below (with A being most efficient and G being least). These issues are particularly acute in the private rented sector (LCRCA, 2019). However, progress on insulating homes has stalled in recent years. Figure 1, taken from the latest CCC report, demonstrates how the number of homes in the UK receiving wall and loft installation fell during the early 2010s and would need to recover to previous levels if the UK is to achieve its pathway to net zero.

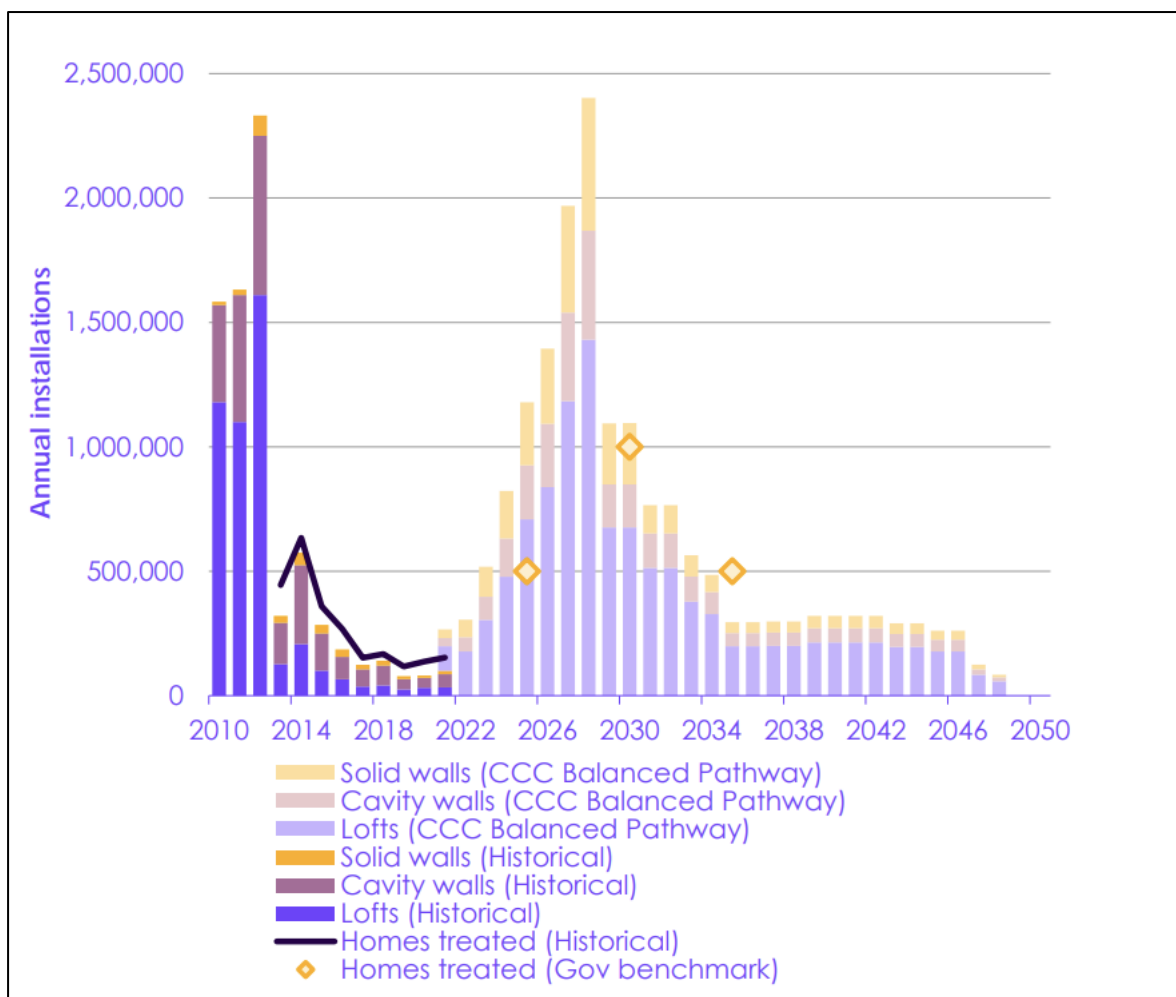


Figure 1: UK home energy efficiency installations (CCC, 2022)

Increasing the rate at which homes are being insulated therefore represents potential 'low hanging fruit' in net zero policy. However, there are several barriers to scaling up insulation installation. Funding is a particular issue, with an estimated £36bn required to bring all housing association homes in the UK up to a minimum EPC C energy rating (Savills, 2021). The figure for the private rented sector is likely to be significantly higher. Skills shortages are also an issue, and the construction sector has called for a national strategy to accelerate the ability of firms to deliver net zero (CITB, 2021; Shand, 2022).

In other areas of policy change, focus will be required to ensure low income households do not bear the brunt of transition to net zero. Lower income households contribute least to the problem of climate change, but are most likely to be negatively affected by it. This is primarily due to the increased prevalence in lower income households of vulnerable groups, which are more susceptible to extreme weather conditions, and poorer housing conditions (JRF, 2014). Transport will need to be decarbonised, with sales of new petrol and diesel cars banned from 2030. Use of public transport and active travel (cycling and walking) will need to increase if LCR is to achieve its net zero target. Renewable energy will need to play a greater role in energy supply than it already does, with around 40% of electricity still generated by fossil fuels. There are costs associated with this transition, and the question of where these costs fall – on which households, businesses and places – is one that can only be answered by governments at the national, regional and local scale, through proactive policy interventions.

## Resilience

Given the multiple threats posed to global security, it is necessary to maximise local climate resilience for communities by delivering adaptations that prepare places, businesses, and local infrastructure for a less-stable climate, whilst also leading the way towards a rapid decarbonisation of the ways we live, work, and get around. Despite this, the CCC has found in its 'Independent Assessment of UK Climate Risk' that the United Kingdom has, so far, "failed to keep pace with the worsening reality of climate risk" (CCC, 2021).

The resilience of the UK's energy/power system is an area of particular concern to the CCC (see Figure 2), with evidence suggesting that, nationally, electricity infrastructure faces threats from more frequent storms, lightning, and high winds as a result of climate change (Jaroszweski, et al., 2021). Indeed, the potential for significant disruption to local energy supply is already apparent, with a recent Ofgem report finding that over one million customers lost power as a result of Storm Arwen in November 2021, and that nearly 4,000 customers were without supply for over a week. This outage not only impacted customers practically, emotionally, and financially, it also raised questions about the resilience of the UK energy system in the face of more extreme weather (Ofgem, 2022). Increasing the resilience of the UK's energy supply must be a priority for the UK government's recently appointed Electricity Networks Commissioner.

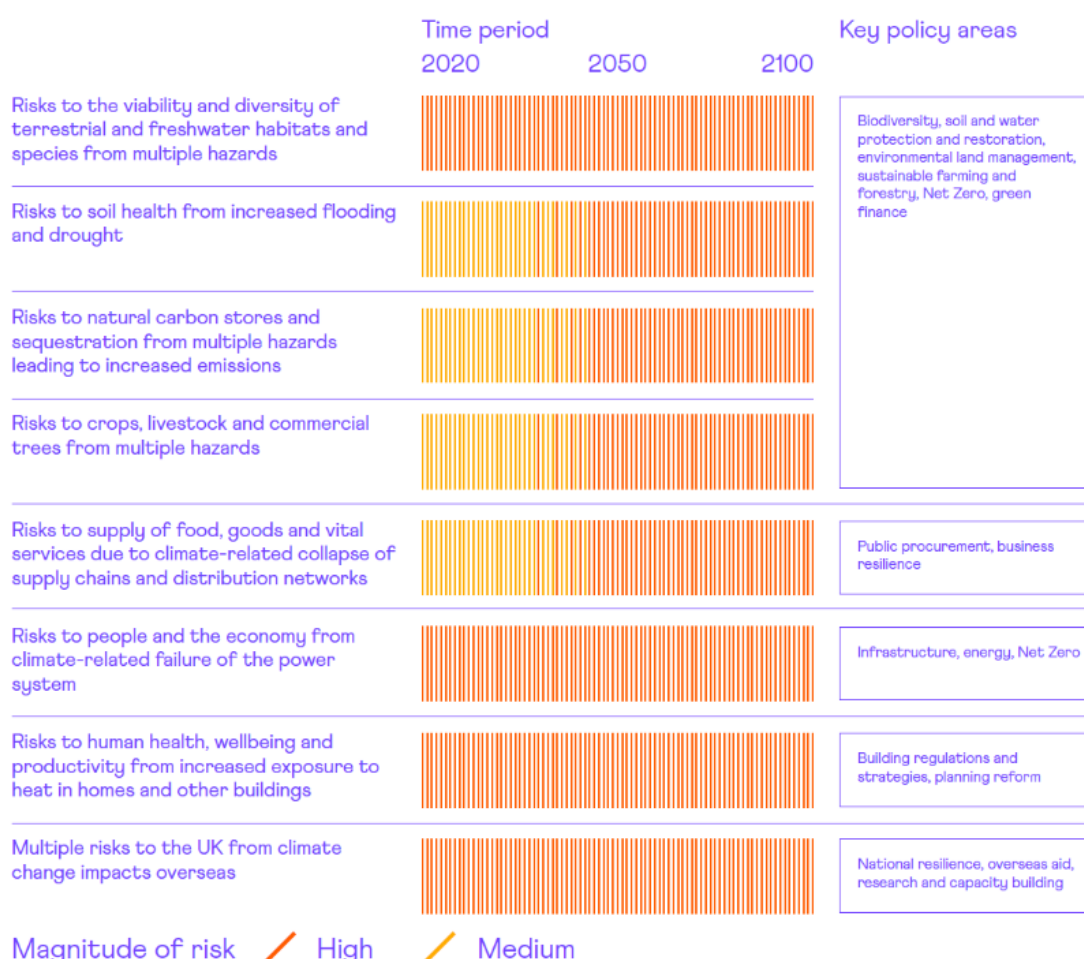


Figure 2: Highest priorities for further adaptation in the next two years (CCC, 2021)

The resilience of the local energy network is recognised as a particularly pressing issue in LCR. The 2022 Merseyside Community Risk has highlighted national electricity failure as among the most severe risks, in terms of both likelihood and potential impact, facing the region (Merseyside Resilience Forum, 2022). With LCR facing rising average temperatures, more frequent extreme weather events, as well as the threat of sea level rises and flooding, it is critical that local energy infrastructure is built to function in a changing climate. Indeed, without a climate resilient energy system, it will be impossible to deliver climate resilient businesses, services, or communities.

However, climate resilience is not just about preparing for the impacts of climate change. It is also about leading the transition to a zero carbon future. The Government has committed to decarbonising the UK's electricity system by 2035 (HM Government, 2021), but the CCC noted last month the lack of an overarching delivery plan or strategy necessary to coordinate delivery against this ambition (CCC, 2022b). Strategic intervention will particularly be required to ensure the electricity network can overcome crucial challenges presented by decarbonisation:

- The transmission grid will require upgrades to cope with more variable energy generation as a result of the shift to renewable sources;
- Increased adoption of new technologies such as electric vehicles and heat pumps will place additional demand on the grid (LCRLEP, 2012).

Overcoming these challenges will be particularly critical to achieving energy resilience in LCR. For example, in a recent report for Liverpool City Council, it was highlighted that the local electricity network will need to be upgraded in order to cope with approximately 130% greater demand by 2030 (Lamley, et al., 2022). In order for LCR businesses and communities to be at the vanguard of the transition to net zero, it will be vital to ensure that the necessary infrastructure is in place to support early-adoption and innovation of new technologies powered by renewable electricity.

With significant economic output (36% of all GVA, more than England average) generated through manufacturing across LCR (e.g. automotive, glass, maritime, etc.), the future resilience of the regional economy is reliant on maintaining suitable energy supply, from sustainable sources, to so-called 'extra-large industrial consumers'. Average UK electricity and gas prices for industrial consumers have been rising steadily over recent decades, and in the second half of 2020 were double the median price paid on average in the European Union (Hutton et al., 2021). Many local businesses are already reporting specific concerns relating to energy prices, as well as mounting supply chain disruption as a result of Brexit, the conflict in Ukraine, and COVID lockdowns in China (LCRCA, 2022a). This presents many firms with a particularly challenging operating environment, and could impact capacity for investment as firms seek to absorb higher costs, or exacerbate wider inflationary pressures in the economy as firms seek to pass on these costs to consumers.

***LCR is already working to increase resilience in a number of ways. Local industry and business are innovating ways to improve energy efficiency and reduce carbon emissions. For example, Glass Futures in St Helens is a Centre of Excellence within the global glass industry, delivering research and development projects aimed at reducing the carbon footprint of glass production (St Helens Borough Council, 2021). Local plans are in place to create a "lean energy" culture of high energy efficiency standards, establish district heat networks" and develop smart grids (Cool Wirral Partnership, 2019). The [LCR Innovation Prospectus](#) identifies local opportunities to maximise the generation of renewable, reliable, and affordable energy within the region, represented most prominently by the significant potential of the Mersey Tidal project (LCRCA, 2022b).***

LCR offers a unique combination of natural assets, connectivity, world-leading innovation centres, and the industries required to translate research on energy resilience into real world solutions (LCRCA, 2022e). However, further scale, scope and strategic coordination of transformation will be required in order to deliver a truly resilient local energy system, and a resilient Liverpool City Region, in the context of accelerating climate change and necessarily rapid decarbonisation. To support this, the LCR Innovation Prospectus highlights our strengths and potential for a future founded on innovation, with an ambition to invest 5% of our GVA in Research and Development (R&D) annually by 2030, which is nearly double the national target. Securing government and industry investment to turn this vision into a reality is therefore a priority.

## Prosperity

As recognised in LCR's 'Plan for Prosperity' strategy: "prosperity is wider than traditional measures of economic growth. It is a blend of improving personal health, wealth, and opportunity; creating thriving neighbourhoods and places; successful and productive businesses that create good quality employment; and a healthy and protected natural environment" (LCRCA, 2022c: 6). Although prosperity has improved in LCR over recent years – with an improved skills base, a more diverse and innovative business environment, as well as many regenerated and better-connected communities – the City Region's transformation remains fragile and incomplete, with several key challenges to meaningful shared prosperity remaining:

- **Deprivation:** a third of all LCR lower super output areas are classed among the most deprived decile in England. Entrenched deprivation is perpetuated within communities by a paucity of high-wage, high-quality jobs. LCR's employment density (jobs per 10,000 working-age residents) is among the lowest of all LEP/CA areas; and of the jobs that are available, too many (one in five) pays below the real living wage (LCRCA, 2022d).
- **Pollution:** LCR has seen a significant reduction in emissions over recent years. However, high dependency on car transport remains a significant source of pollution locally and has contributed to the introduction of several Air Quality Management Areas across LCR – including the whole of Liverpool (LCRCA, 2022d). Meanwhile, the River Mersey was recently found to be the most polluted in the UK, as a result of contamination with microplastics (Greenpeace, 2019).
- **Poor health:** a city-region that produces poverty and pollution is one that produces poor health. Average life expectancy in LCR is around two years lower than the rest of England, and almost one in four residents are reported as having a limiting long-term illness or disability, with poor mental health a particular concern (Office for Health Improvement & Disparities, n.d.). This has consequences for economic opportunity and employment, with 32% of those that are economically inactive in LCR reporting that this is due to ill health (LCRCA, 2022d).

There are extensive opportunities around the transition to a net zero economy, and LCR is well placed to lead on and benefit from investment. Research suggests that up to six million jobs in the UK could be impacted by the shift to net zero, with those working in the construction, manufacturing, and transport sectors particularly at risk (UKRI, 2021). These are sectors that make up a substantial part of LCR's current economy, an economy that can ill-afford to lose good jobs. Support will therefore be needed to enable workers to navigate this uncertain landscape with confidence, with opportunities to retrain and attain new, more sustainable jobs.

There are significant local opportunities to create these sustainable jobs, at scale, in Liverpool City Region. Describing LCR as "the UK's Renewable Energy Coast", the recently published LCR Innovation Prospectus emphasised the economic opportunities associated with the

Mersey Tidal project, offshore wind generation, and the hydrogen economy. For example, the HyNet North West project is claimed to be on course to deliver one of Europe's largest industrial decarbonisation clusters in the next decade, with an aim to create 75,000 local jobs by 2035 (LCRCA, 2022e).

Nurturing sustainable industries creates opportunities to improve the quantity, and quality, of local jobs, whilst also increasing the number of businesses that have the potential to sell beyond their local market – maximising the potential of local 'exporters' has been found to be key towards tackling low productivity (Centre for Cities, 2018). However, embracing the opportunities of the transition to zero carbon can also help improve the health and wellbeing of people and communities, as well as the economy. Achieving net zero is expected to reduce air pollution significantly, as industry, transportation, and energy generation shift away from burning fossil fuels. A recent study from California has estimated that 14,000 premature deaths a year could be avoided in the state if net zero targets are reached by 2050, and that these health co-benefits will be disproportionately higher in disadvantaged communities (Wang, et al., 2020). Ensuring LCR can play a leading role at the forefront of the transition to a zero carbon economy could, therefore, play a key role in disrupting the health inequalities that prevent many residents accessing opportunities and fulfilling their potential.

Indeed, there is an opportunity to simultaneously level up and deliver net zero: unlocking the potential for growth, productivity and employment in LCR's 'green jobs' sectors, will help to reduce pollution, improve health, and close prosperity gaps between LCR and the rest of the UK.

### **Key questions.**

#### **1. Why focus on Liverpool City Region?**

- Given the national and international scale of the energy challenge, the cost of living crisis, and the climate emergency, how can Liverpool City Region position itself as a priority for intervention and investment?
- How can LCR shape a compelling narrative as a place with strong potential to lead the transition to net zero?

#### **2. What can be done locally?**

- What powers and resources are available locally to support a fair, resilient, and prosperous transition to net zero and overcome the cost of living crisis created by rising energy bills?
- How can local stakeholders across the public, private, and third sectors coordinate efforts to improve energy efficiency and sustainability in LCR?
- How can local plans for achieving net zero be developed and accelerated?

#### **3. What is needed from national government?**

- How can the national levelling up and net zero agendas be brought together to support a green industrial revolution in places like LCR?
- How can LCR lobby for longer-term industrial and energy strategies, to provide improved market certainty and a stable investment environment for the transition to net zero?
- How can LCR secure further major infrastructure investment from national government to support significant (and necessary) local projects, not least Mersey Tidal?

#### **4. What are the threats and opportunities for Liverpool City Region?**

- What threat does climate change pose to the people, businesses and infrastructure of Liverpool City Region?

- What are the local opportunities from the transition to net zero locally, in terms of jobs, investment, training, business growth and prosperity?

### **About the Heseltine Institute for Public Policy, Practice & Place**

The Heseltine Institute is an interdisciplinary public policy research institute which brings together academic expertise from across the University of Liverpool with policy-makers and practitioners to support the development of sustainable and inclusive cities and city regions. The Institute has a particular focus on former industrial cities in the process of regeneration, such as the Liverpool City Region (LCR). Through high impact research and thought leadership, knowledge exchange, capacity building, and evidence based public policy, the Institute seeks to address key societal challenges and opportunities pertaining to three overarching themes: 21st Century Cities, Inclusive and Clean Growth, and Public Service Reform.

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