

## **Appendix 1 Scale of the Challenge**

### Power Sector

The power sector relates to all activities that result in the generation of electricity. The Leeds City Region generates 12 percent of the UK's total electricity generation. As a rough estimate, 20% of City Region emissions in 2017 came from businesses, industry and residents using electricity. To deliver the net-zero target a range of partners will need to develop a range of new low/ zero carbon power schemes. This will be predominately wind and solar schemes coupled with energy storage e.g. batteries, and demand-side response e.g. smarter ways of managing electricity. The ESDP identified some interventions that will contribute to the decarbonisation of the power sector. These include 0.3 MtCO<sub>2</sub> savings from solar PV on Park and Ride sites, battery storage and community energy installations. In addition to the increase in low-carbon power a reduction in demand needs to occur to ensure the available resource can be used as efficiently as possible.

The Leeds City Region Energy Accelerator is one mechanism for increasing the number of low-carbon energy projects being developed in the region. It is currently projected to lever in over £122 million of capital investment from just over £3 million of project development support.

Examples of projects already being developed by local authorities that will contribute to the decarbonisation of the power sector include an anaerobic digestion facility being progressed by Kirklees Council and large-scale solar PV funded through the North and West Yorkshire Business Rates Pool.

### Buildings – Housing

The buildings sector relates to all activities that generate emissions from the operation of both commercial and domestic buildings. While data is not available for commercial buildings in 2017 the domestic sector contributed 23% of emissions in the City Region.

To decarbonise a home, energy demand needs to be reduced by improving the energy efficiency of the home by maximising loft and cavity wall insulation, installing double / triple glazing and through changes to how energy is used by the occupant. Once demand is reduced, the remaining energy needed in the home will need to come from renewable or low carbon sources i.e. solar panels, heat pumps, district heat network.

An estimated 963,000 homes in the City Region are below an EPC (Energy Performance Certificate) rating of C. It is the Government's ambition to improve the energy efficiency of fuel poor homes to EPC C or better by 2030 (and as many homes as possible to be improved to EPC Band C by 2035). Hence, as a minimum the City Region should be striving to achieve the same performance standards in its homes by between 2030 – 2035.

Achieving an EPC rating of C for all homes in the City Region will require a range of measures as above (2.19) to be installed and is likely to include the use of renewable energy to heat and power our homes. To roll out such as programme by

2030- 2035 would need require an estimated 370 installations every day by 2030. The estimated cost would be £8.95 billion<sup>1</sup>. In addition, new homes built today will need to be built to zero-carbon standards with high fabric energy efficiency and with renewable/low/zero carbon energy generation, the same will need to happen for non-domestic buildings.

We recognise funding the required work in the buildings will be difficult, and the Combined Authority has already begun to explore and secure funding from the North East, Yorkshire and Humber Energy Hub to develop new innovative funding models to deliver the scale and pace needed across existing homes.

Examples of projects already being developed by local authorities that will contribute to the decarbonisation of the buildings sector include district heat networks being progressed by Bradford, Calderdale and Leeds Councils and housing retrofit by City of York Council and Leeds City Council.

## Transport

The transport sector relates to all activities that generate emissions from transporting goods and people. In 2017 the transport sector contributed 38% of City Region emissions and is currently the highest emitting sector, with 96.6 percent of the sector's emissions coming from road transport.

Emissions from surface transport have stalled in recent years, producing 4-5 million tonnes of CO<sub>2</sub> in the region. Despite the increasing fuel efficiency of new vehicles, the energy saving per mile has been offset by an increase in road traffic. Motor vehicle manufacturers will be expected to reduce the emissions further, producing at least 30-37 percent less by 2030 to meet EU Standards. The Government has set targets for at least 50 percent of new cars to be electric vehicles by 2030, and 40 percent of vans. Emissions from aviation have doubled since 1990, now accounting for 7 percent of the UK carbon budget. To date aviation emissions have not been an area tackled by the Combined Authority/LEP, but they will be included in the emission reduction pathway work to help understand future impacts and policies that may be required to support the decarbonisation of this sector.

The challenge of decarbonisation is considerable with fast, radical reductions required in emissions. With the transport sector, our main challenges lie in the way that people travel to work and for business. Private car and vans make up 70 percent of all travel to work in West Yorkshire and road transport accounts for 96 percent of transport carbon emissions.

Decarbonising transport will require radical action and a major uplift in investment. The scale of the challenge is such that technology alone cannot reach net-zero. Accelerating the introduction of clean technologies will play a part, but realising the full potential of the transport sector to deliver net-zero carbon targets will require ambitious modal shift towards low carbon public transport and active travel (walking and cycling) alongside a major reduction in the use of private cars powered by

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<sup>1</sup> Based on national estimates of £9,300 per property

carbon-emitting fossil fuels, reducing the number of vehicle km travelled and moving fleets to zero emission vehicles.

Work has commenced, with consultancy support, to identify pathways to decarbonising transport in the region, with early work identifying assumptions that will shape the approach to modelling different scenarios for the effectiveness and interplay of different technology mixes and policy in driving down carbon emissions. These assumptions suggest the need for significant and early electrification of transport supported by enabling technologies such as energy storage. More significantly the assumptions indicate the need for high levels of demand reduction and modal shift, with potentially 50% reduction in car use and 10% reduction in both van and HGV use, implemented alongside strong land use policies.

Examples of projects already being development by local authorities that will contribute to the decarbonisation of the transport sector include the electric vehicle strategy progressed by Harrogate Council and low-emission taxis across the West Yorkshire local authorities.

### Industry

The industrial sector relates to all activities that generate emissions from the manufacturing of goods. This includes the energy and carbon intensive industries that are located within the City Region. In 2017 the industrial (and commercial) sectors contributed 20 percent of City Region emissions.

There are a variety of ways in which industry could decarbonise to meet the zero-carbon ambition. Some of these have been identified in the ESDP e.g. advancing industrial energy efficiency and carbon capture, utilisation and storage (CCUS). A recent report from the Committee on Climate Change (CCC) identifies a host of different interventions relevant to the City Region:

- Electric and hydrogen heaters for low temperature processes e.g. the food and drink industry.
- Solid biomass combustion, hydrogen heaters, electric kilns / furnaces, radio frequency heating and electric plasma gas heaters for high temperature processes e.g. the glass industry.
- Solid biomass, hydrogen and electric boilers, and heat pumps in the creation of steam for industrial processes e.g. the chemicals industry.

CCUS will have a key role to play in decarbonisation, especially in those industries where total decarbonisation will be difficult in the timeframes necessary. Drax Group are part of an ambitious plan to make the Humber the first net-zero carbon industrial cluster in the UK by 2040. We will work closely with Drax Group and the Humber LEP to understand how these plans can extend to and benefit the Leeds City Region.

As with the building sector, energy efficiency will be central to decarbonising SMEs. The City Region already has an established, successful offer to SMEs to improve their energy, water and waste efficiency through the Resource Efficiency Fund (REF). An expanded REF, including a circular economy pilot scheme, will contribute to reducing emissions from business and industry.

An example of a project already being developed by the Combined Authority and local authorities is the Clean Growth Audit, which enables for the first time to identify where our carbon intensive industries in the City Region are.

### Land- Use and Agriculture

The land-use and agriculture sector relate to all activities that generate emissions through the active management of land e.g. for food production. The land-use and agriculture sector is a small carbon sink in the City Region, sequestering 0.02 percent of emissions.

The Leeds City Region Green Infrastructure Strategy and Delivery Plan provides a good indication of the measures that will decarbonise this sector e.g. peat restoration, tree planting. The CCC provide an understanding of the types of measures needed to decarbonise this sector, including:

- Encouraging land managers to use nitrogen efficiently e.g. through precision farming, use of organic residues, increasing legume crops.
- Increasing woodland coverage
- Agroforestry
- Removal of less-productive trees to allow peatland recovery.

The majority of the local authorities in the City Region are signed up to the White Rose Forest. This commits local authorities to helping to increase tree cover within their respective areas. The tree planting that is initiated through the White Rose Forest will help to decarbonise the land-use and agricultural sector.

### **Assessment Matrix**

The matrix below illustrates the key sectors of potential interest for the LEP Panels.

### Assessment Matrix

Sector	LEP	BIG	ESP	GEP	IGPPP	Place
Power	✓ Oversight	✓	✓ Employment and skills opportunities from all sectors as they decarbonise	✓	✓ Ensure approach is Just for all members of society and businesses	
Buildings		✓				✓
Transport		✓				✓
Industry		✓				
Land Use and Agriculture		✓				✓