



Greater
South East
Net Zero Hub

HertsLEP

LOCAL ENTERPRISE PARTNERSHIP



Domestic Energy Efficiency Supply Chain Market Intelligence

Report Years: 2019/20 to 2021/22

January
2023



Disclaimer

kMatrix Data Services Ltd

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It does not constitute advice to the client as to what they should do, when, where or with whom.

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Greater South East Net Zero Hub

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Report Overview

This report forms part of the evidence-base produced within Lot 1 of the Greater South East Net Zero Hub (GSENZH) project: Domestic Retrofit Supply Chain Market Intelligence & Skills Assessment. Lot 1 of the project is specifically focussed on the Domestic Energy Efficiency Supply Chain Market Intelligence.

This report examines the market in the Hertfordshire Local Enterprise Partnership (HertsLEP), with detail comparing the ten Local Authorities (LAs) within the region. Alongside this report are a further eleven reports, one for each LEP and a GSENZH regional report.

The detail within these reports feed into the wider Lot 1 reporting, which includes the extensive stakeholder engagement and wider analysis.

Geography

The GSENZH is one of five local net zero hubs in England, funded by the Department for Business, Energy and Industrial Strategy. The overarching aims of the hubs are to bring investment into local energy projects and working together to share best practice across the regions.

The GSENZH is a collaboration of eleven Local Enterprise Partnerships (LEPs), who work together to increase the number, scale and quality of local energy projects being delivered across the greater south east region of England. These LEPs are:

Greater South East Net Zero Hub Map



Note: TVBLEP was re-named BerksLEP in 2022

This report includes local authority-level data, to allow deep disaggregation within the LEP area. For clarity of data visualization, the names of many local authorities have been shortened. The formal names and shortened labels of the local authorities within Hertfordshire Local Enterprise Partnership (HertsLEP) are listed below:

Local Authority name	Shortened Name
Borough of Broxbourne	Broxbourne
Dacorum Borough Council	Dacorum
East Hertfordshire District Council	East Herts
Hertsmere Borough Council	Hertsmere
North Hertfordshire District Council	North Herts
St Albans City and District Council	St Albans City
Stevenage Borough Council	Stevenage
Three Rivers District Council	Three Rivers
Watford Borough Council	Watford
Welwyn Hatfield Borough Council	Welwyn Hatfield

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Executive Summary

This executive summary provides key findings, drawn from the graphical representation of the data within the report. Sector definitions are provided in Appendix 1.

HertsLEP's Domestic Energy Efficiency Supply Chain (DEESC) sector was worth £1.2bn to the HertsLEP's economy in 2021/22, as indicated by the value of sales in the sector. These sales were generated by over 330 businesses that employed over 12,000 people in the sector in 2021/22. The HertsLEP accounts for 4.3% of the wider GSENZH DEESC market.

Sales and growth

The Domestic Energy Efficiency Supply Chain sector in the HertsLEP has grown year on year since 2019/20. Total sales in the sector were worth £1.0bn in 2019/20 and have now reached £1.2bn in 2021/22. This compares with the wider GSENZH sales of £22.8bn in 2019/20 and £27.8bn in 2021/22.

The sector in the HertsLEP grew by 10.7% during the financial year 2019/20 to 2020/21 and 10.2% during 2020/21 to 2021/22. This compares with the GSENZH average of 9.6% and the 11.3% respectively.

Employment

Employment in HertsLEP's Domestic Energy Efficiency Supply Chain sector in 2021/22 was 12,135, up from 9,953 in 2019/20. Annual growth rate in employment was 8.4% between 2019/20 and 2020/21 and 12.5% between 2020/21 and 2021/22. This compares with the GSENZH average of 7.7% and 13.3% respectively.

Companies

The number of companies in HertsLEP's Domestic Energy Efficiency Supply Chain sector in 2021/22 was 338, up from 279 in 2019/20. Annual growth rate in the number of companies was 9.0% between 2019/20 and 2020/21 and 11.2% between 2020/21 and 2021/22. This compares with the GSENZH average of 6.2% and 11.3% respectively.

Activity

Activities within the sector, allocated through sales were split: Installation 52%, Manufacture 17%, Advisory 7%, Sales 7%, Maintenance 6%, Product Design 5%, R&D 4%, Professional Services 2%, with negligible Service and Information activity. This split is within one percentage point of the wider GSENZH.

HertsLEP's sub-sectors

In 2021/22 HertsLEP's Domestic Energy Efficiency Supply Chain sector was made up by the following proportions: Energy Efficiency Measures 63%, Electricity and Heat 26% Making Good After Works 9% and Advisory and Related Services 3%. This is similar to the wider GSENZH with 62%, 26%, 9% and 2%.

HertsLEP's sub-sector strengths

The five largest sub-sectors in the Domestic Energy Efficiency Supply Chain sector by sales account for 78% of the HertsLEP's total sales and are made up of:

- Ventilation & Air-tightness (£666m) – this sub-sector includes insulation and activities such as insulation manufacturers, agents and installers

- Walls & Ceilings (£95m) - this includes those installing plasterboard, plasterers and painters and decorators, alongside companies manufacturing the plasterboard and paint and those providing advisory services
- Heat Pumps (£68m) – this includes manufacturing of components, installation and maintenance
- Energy Management (£68m) - this includes design, manufacture, supply, installation and maintenance activities
- Photovoltaic (£44m) - this includes predominantly supply and installation, with some manufacture ancillary equipment

The next five largest sub-sectors by sales account for a further 12% of HertsLEP’s total sales and are made up of:

- Biogas (£35m) - this includes supply and installation, manufacture and maintenance
- Biomass (£32m) - this includes manufacturers, installers and consultancies
- Technical Services (£26m) - include construction project management
- Energy Saving Lighting (£24m) – this includes design, manufacture, agents and installers
- Hot Water (£23m) – this includes manufacturers and installers

Key Energy Efficiency Measures Sub-sectors

The two largest Energy Efficiency Measures sub-sectors are Ventilation and Air-tightness (including insulation) and Energy Management. Within those sub-sectors, key markets include:

- Ventilation and Air-tightness (£666m)
 - Roof/Loft Insulation (£256m)
 - External Cavity Wall Insulation (£102m)
 - Floor Insulation (£59m)
 - Ventilation and Heat Recovery Systems (£41m)
 - Heating System Insulation (£38m)
 - Energy Efficiency Windows (£37m)
- Energy Management (£68m)
 - Home Energy Systems Integration (18m)
 - Home Automation (£18m)
 - Energy Management Systems (£18m)
 - Smart Heating Controls (£14m)

Key Electricity and Heat Sub-sectors

The six largest Electricity and Heat sub-sectors are Heat Pumps, Photovoltaic, Biogas, Biomass, Hot Water and Electric Vehicle Charge Points. Within those sub-sectors, key markets include:

- Heat Pumps (£68m)
 - Air Source Heat Pumps (£29m)
 - Ground Source Heat Pumps (£27m)
 - Water Source Heat Pumps (£12m)
- Photovoltaic (£44m)
 - Photovoltaic PV (£24m)
 - Solar Thermal (£20m)
- Biogas (£35m)
 - Biogas Plant (£10m)
 - Biogas Energy Systems (£9m)
 - Biogas Boilers and Related Systems (£8m)
 - Biogas Furnace Systems (£7m)
- Biomass (£32m)

- Biomass Boilers and Related Systems (£12m)
- Biomass Furnace Systems (£11m)
- Biomass Energy Systems (£10m)
- Hot Water (£23m)
 - Hot Water Systems (£23m)
- Electric Vehicle Charge Point (£22m)
 - On-road Solutions (£11m)
 - Off-road Solutions (£10m)

Key Advisory and Related Services Heat Sub-sectors

The largest Advisory and Related Services sub-sector is Technical Services and key markets include:

- Technical Services (£26m)
 - Project Planning (Strategy and Approach) (£11m)
 - Buildings Surveys (£3m)
 - Planning Application Services (£3m)
 - Monitoring and Evaluation (£3m)

Investment

Investment within HertsLEP grew in all three categories of investment between 2019/20 and 2021/22:

- Private Equity Investment grew 24.1% from £79m in 2019/20 to £97m in 2021/22
- Venture capital Investment grew 19.0% from £81m in 2019/20 to £96m in 2021/22
- Other Investment grew 18.0% from £80m in 2019/20 to £95m in 2021/22

The pattern of Investment was similar to sales, with the exception of the Heat Pumps sub-sector, where the largest sub-sector in terms of sales was Air Source Heat Pumps, followed by Ground Source and Water Source Heat Pumps. Investment in Private Equity and Venture Capital were higher for Water Source Heat Pumps than for Air Source or Ground Source Heat Pumps. Other investment, which includes government, followed the same pattern as for sales.

Sub-sector growth

HertsLEP's five largest sub-sectors by sales have all enjoyed high levels of growth in sales, number of employees and number of companies between 2019/20 and 2021/22:

- Ventilation & Air-tightness – sales have grown from £545m to £666m (22.2%), number of employees by 22.1% and number of companies by 22.3%
- Walls & Ceilings – sales have grown from £78m to £95m (21.6%), number of employees by 21.0% and number of companies by 29.6%
- Heat Pumps – sales have grown from £56m to £68m (22.1% increase), number of employees by 21.9% and number of companies by 31.6%
- Energy Management – sales have grown from £56m to £68m (21.4% increase), number of employees by 21.3% and number of companies by -3.2%
- Photovoltaic – sales have grown from £36m to £44m (21.1% increase), number of employees by 20.9% and number of companies by 19.6%

Sub-sectors which saw stronger growth than the UK average between 2019/20 and 2021/22 include:

- Battery Technologies with 21.6% (GSENZH 22.2%, UK 19.9%)
- Biomass with 22.3% (GSENZH 22.0%, UK 21.2%)
- Combination Systems with 21.3% (GSENZH 21.7%, UK 20.5%)
- Heat Pumps with 22.1% (GSENZH 22.1%, UK 21.5%)
- Wind with 22.0% (GSENZH 21.3%, UK 18.1%)

- Ventilation & Air-tightness with 22.0% (GSENZH 21.9%, UK 21.3%)
- Walls & Ceilings with 21.6% (GSENZH 21.9%, UK 18.5%)

Sub-sectors which saw weaker growth than the UK average between 2019/20 and 2021/22 include:

- Sector Development with 23.0% (GSENZH 21.6%, UK 24.7%)
- Electric Heating with 22.1% (GSENZH 22.2%, UK 24.1%)
- Geothermal with 21.9% (GSENZH 22.3%, UK 24.1%)
- Heat Networks with 22.1% (GSENZH 21.7%, UK 24.8%)
- Hot Water with 21.2% (GSENZH 22.7%, UK 24.6%)
- Photovoltaic with 21.1% (GSENZH 22.2%, UK 23.8%)
- Energy Saving Lighting with 22.4% (GSENZH 22.4%, UK 27.1%)
- Cleaning Services with 21.5% (GSENZH 22.2%, UK 24.2%)
- Floors with 21.6% (GSENZH 21.9%, UK 24.8%)

Sub-sector Strengths and Weaknesses

Sub-sector strengths include:

- Wind has stronger growth than the UK and above average market size
- Battery Technologies has stronger growth than the UK and above average market size
- Biomass has stronger growth than the UK and above average market size
- Hot Water has weaker growth than the UK, but above average market size
- Heat Networks has weaker growth than the UK, but above average market size
- Cleaning Services has weaker growth than the UK, but above average market size
- Electric Heating has weaker growth than the UK, but above average market size
- Energy Management has weaker growth than the UK, but above average market size
- Heat Pumps has similar growth than the UK, but above average market size
- Hydrogen has similar growth than the UK, but above average market size
- Walls & Ceilings have stronger growth than the UK, but below average market size

Sub-Sector weaknesses include:

- Floors has weaker growth than the UK and below average market size
- Sector Development has weaker growth than the UK and below average market size
- Geothermal has slightly weaker growth than the UK and below average market size

Scalability of sub-sectors

Scalability of the sub-sectors within the HertsLEP is variable and when combined with GVA, strengths include:

- Consumer Advisory Services has a very small GVA but the highest Scalability
- Hydrogen has a small GVA but high Scalability
- Photovoltaic with large GVA and above average Scalability
- Energy Management with large GVA and above average Scalability
- Hot Water with moderate GVA and above average Scalability

Forecasts

5-year forecasts for sales include:

- No policy sales to increase year-on-year from 11.8% between 2021/22 and 2022/23 to 17.6% between 2025/26 and 2026/27
- Current Policy sales to include a large growth of 117.8% between 2021/22 and 2022/23 followed by 13.3% between 2022/23 and 2023/24 to 18.9% between 2025/26 and 2026/27

5-year forecasts for employment include:

- No policy sales to increase year-on-year from 9.1% between 2021/22 and 2022/23 to 11.3% between 2025/26 and 2026/27
- Current Policy sales to include a large growth of 71.4% between 2021/22 and 2022/23 followed by 9.8% between 2022/23 and 2023/24 to 14.7% between 2025/26 and 2026/27

Net Zero 2030 and 2050 forecasts for sales include:

- No policy sales are forecast to increase from £1.2bn in 2021/22 to £27bn (22.7x) to reach net zero by 2030 or £6bn (5.3x) to reach net zero by 2050
- Current Policy sales are forecast to increase from £1.2bn in 2021/22 to £36bn (30.1x) to reach net zero by 2030 or £9bn (7.2x) to reach net zero by 2050

Net Zero 2030 and 2050 forecasts for employment include:

- No policy employment is forecast to increase from 12,135 in 2021/22 to 203,244 (16.7x) to reach net zero by 2030 or 39,877 (3.3x) to reach net zero by 2050
- Current Policy employment is forecast to increase from 12,135 in 2021/22 to 334,300 (27.5x) to reach net zero by 2030 or 51,426 (4.2x) to reach net zero by 2050

A key point of the analysis is even without policy, the sector is forecast to see strong, double-digit growth throughout the forecast period and current policy has the potential to front-load that growth, resulting in a significantly larger market. To reach net zero by 2030 requires the largest proportional increase in both sales and employment, because there is a smaller timeframe to complete the retrofit of a finite number of properties.

HertsLEP's Exports

The value of exports in HertsLEP's Domestic Energy Efficiency Supply Chain sector in 2021/22 was £239m, an increase from £196m in 2019/20. This accounted for 4.3% of the GSENZH's DEESC exports in 2021/22 and is in line with the HertsLEP's 4.3% of GSENZH's overall DEESC market.

HertsLEP's DEESC exports grew by 10.5% and 10.4% over the last three years which compares with GSENZH growth of 10.3% and 10.8%.

HertsLEP's top Export sub-sectors which saw large export market and strong growth include:

- Ventilation & Air-tightness - £131m
- Walls & Ceilings - £18m
- Energy Management - £14m
- Heat Pumps - £12m
- Photovoltaic - £10m
- Biomass - £7m
- Biogas - £6m

HertsLEP's Imports

The value of imports was lower than exports, making the LEP a net exporter in the market. The value of imports in the HertsLEP's Domestic Energy Efficiency Supply Chain sector in 2021/22 was £161m, an increase from £132m in 2019/20. This accounted for 4.1% of the GSENZH's DEESC imports 2021/22 and is in line with the HertsLEP's 4.3% of GSENZH's overall DEESC market.

HertsLEP DEESC imports grew by 10.9% and 10.3% over the last three years which compares with GSENZH growth of 10.2% and 10.8%.

Introduction to the Domestic Energy Efficiency Supply Chain

The definition of Domestic Energy Efficiency Supply Chain used within this study is broadly defined as:

“Those activities required to deliver net zero across the domestic housing sector”

This includes obvious activities such as insulating the property, but also manufacturing of the insulation materials, the advice given to insulate the house and the behavioural scientists working to change behaviours. It does not include wider activities not directly attributable to the property, e.g., district heat networks are included, but only for those activities relating to the property, such as the infrastructure within the property boundary. Likewise, Wind is included, but only small domestic wind turbines. As such, these sub-sectors are lower in significance within the domestic energy setting than the wider energy market.

Skills within this remit include equipment and materials installers, alongside domestic assessment, advice, maintenance and manufacture and extending into sales, communication and sector development activities and public procurement.

Hands-on activities involve the energy efficiency technologies such as the building envelope or fabric, separating the outside elements from the inside of the property, including energy efficient windows, doors, wall and loft insulation, but also home energy management systems, home automation and smart heating controls. Activities also involve energy generation and heating technologies such as photovoltaics, heat pumps, geothermal, heat networks and so on, but also the installation of electric vehicle charge points.

Ancillary activities include societal behaviour studies, societal engagement campaigns, sector development activities (such as business model development) and (technical services such as planning application services, architectural services and environmental consultancy).

Brief Methodology for data production

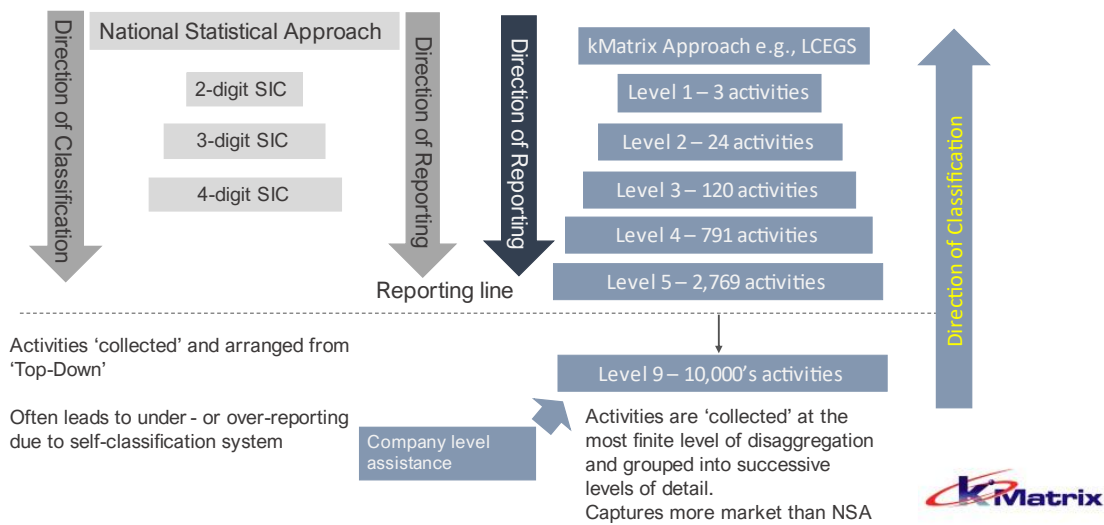
kMatrix uses a unique data triangulation methodology, developed as an international research programme with Professor R. Jaikumar of Harvard University over 35 years ago and subsequently developed in countries across Europe.

The core research processes within the methodology are used to track technology and market change and employs “big data,” analytical industrial data grids, business case studies and industry-level research to provide probabilistic and measurable evidence about how companies and economies adapt to and perform within changing market conditions. The process was originally developed to look at individual companies, providing evidenced data for development and has since mapped the market of single technologies through to whole countries. This is achieved outside of the Standard Industrial Classification system, enabling detailed market segmentation.

Because the process was originally developed to look at individual companies, providing evidenced data for development, sectors are classified from the ‘bottom up,’ collecting activities from the most finite level of granulation and grouping them into successive levels of detail. This diagram provides an example of the depth of detail possible, using the Low Carbon Environmental Goods and Services (LCEGS) sector as an example:

kMatrix Sector Classification System

Example of Bottom-up Approach to Classification– LCEGS Taxonomy



This is quite different to the National Statistical Approach, which classifies from the 'top down,' with a company choosing their 2-digit code, then successive codes down through the classification system. The SIC system is very good as a national accounting system, but it struggles with hard to measure sectors such as LCEGS or Domestic Energy Efficiency Supply chain. Here, the kMatrix system of data collection, which triangulates transactional data from many sources, over 11,200 for this study, provides the flexibility of a definition tailored to the sector being studied. Although the sector is classified from the bottom up, the sector taxonomy is reported from the sector level down, through a series of levels of complexity.

This process has measured the LCEGS sector for the Greater London Authority and the UK for over a decade. kMatrix also collaborate with academic colleagues in several fields, co-authoring academic papers, which are peer-reviewed and published in academic journals including Nature, Climate Services, and the Lancet.

Example sectors the process has been applied to, where evidence is available in the public domain via clients publishing reports or published peer-reviewed academic journals include:

- Domestic Energy Retrofit in the North East <https://evidencehub.northeastlep.co.uk/domestic-retrofit-skills-needs-assessment>
- Low Carbon Environmental Goods and Services Sector: https://www.london.gov.uk/sites/default/files/london_low_carbon_market_snapshot_-_2019.pdf and <https://www.sustainabilitywestmidlands.org.uk/resources/midlands-low-carbon-sector-study/>
- The Green Economy: <https://rgs-ibg.onlinelibrary.wiley.com/doi/pdf/10.1002/geo2.36> and <https://www.nature.com/articles/s41599-019-0329-3>
- Adaptation Economy: <https://www.nature.com/articles/nclimate2944>
- Adaptation & Resilience to Climate Change: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(21\)01787-6/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)01787-6/fulltext)
- Carbon Finance: <https://www.nature.com/articles/nclimate1492?draft=marketing>
- Weather and Climate: <https://advances.sciencemag.org/content/3/5/e1602632.full>
- Climate Services: <https://www.sciencedirect.com/science/article/pii/S2405880719300494?via%3Dihub>

Impact of Policy on Sector Forecasts

An important element of this supply chain market intelligence report is the provision of forecasts for the size of the sector, in terms of the sales and employment for different forecasting periods and under different forecasting scenarios.

The baseline measurement for 2021/22, together with the historical trends of 2019/20 and 2020/21 were used to forecast the likely growth of the sectors and sub-sectors within the DEESC.

Forecasts are provided for:

- 5-year annual timeseries forecast with no policy overlay
- 5-year annual timeseries forecast applying current policies
- Forecasting size of industry needed to deliver net zero by 2030 with no policy overlay
- Forecasting size of industry needed to deliver net zero by 2030 applying current policies
- Forecasting size of industry needed to deliver net zero by 2050 with no policy overlay
- Forecasting size of industry needed to deliver net zero by 2050 applying current policies

The purpose of providing a distinction between 'No Policy' and 'Current Policy' is to provide detail to policy makers of the likely impact of current policy, but also to provide the likely baseline minimal growth of the sector if those policies were not in place.

The 'No Policy' forecast essentially provides a baseline growth, which represents an average of the forecasts from within the sector and provides:

- the likely trajectory of the sector without intervention for the 5-year forecasts
- the minimum size the sector would need to be to achieve net zero targets for 2030 or 2050

The 'Current Policy' forecast uses the policies and implications drawn from the Heat & Buildings Strategy (2021), Net Zero Strategy (2021), the Prime Minister's Ten Point Plan (2020), Industrial and Clean Growth Strategies (2016), Energy White Paper (2020), Energy Security Policy (2021) and Industrial Decarbonisation Strategy (2022). These have been overlaid on the baseline 'No Policy' forecasts, to provide insight into the impacts of those policies and provide:

- the impact of current policies on the likely trajectory of the sector for the 5-year forecasts
- the size the sector would need to be to achieve net zero targets for 2030 or 2050 under current policy

The impact of policy on the sector is both direct through funding, and indirect such as the increase in consumer awareness through increased reporting on polices, which drives an organic increase in demand for energy efficiency.

In addition to the more general boost to the sector through awareness and cultural movement, there are also specific policies which focus on social housing and assistance to those in fuel poverty which alter the supply chain needs of the sector, for example increase the need for painters and decorators.

The Domestic Energy Efficiency sector has been growing steadily for the last decade, however a significant effect of policy on the sector is to front-load the growth, with immediate policy interventions causing significant growth over the next couple of years as the sector rapidly increases capacity. This would then be followed by more usual sectoral growth, resulting in a larger market overall.

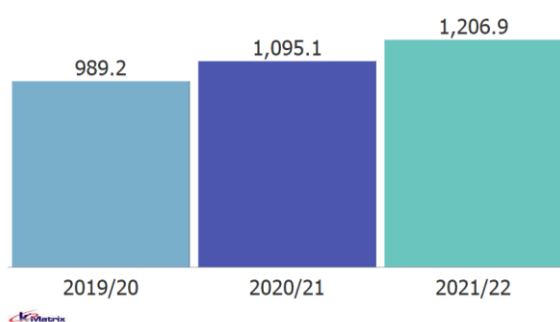
1. HertsLEP LEP Domestic Energy Efficiency Supply Chain Analysis

This section of the report analyses the HertsLEP LEP Domestic Energy Efficiency Supply Chain (DEESC) at Level 1 and Level 2 (see Appendix 1 for definitions). It also provides information at Level 3 to show the type of activities included in these sub-sectors.

1.1 HertsLEP DEESC Compared by Year

In this section of the report, HertsLEP LEP DEESC performance is compared for the last three years for the three key measures of Sales, Employment and Growth.

Figure 1: Sales 2019/20 to 2021/22 in £m

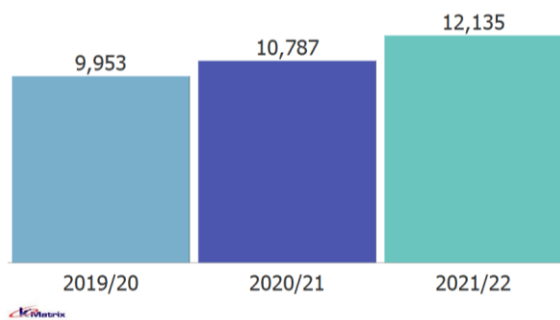


HertsLEP LEP DEESC sales in 2021/22 were £1.2bn, up from £1.0bn in 2019/20.

Annual sales growth in HertsLEP LEP DEESC was 10.7% from 2019/20 to 2020/21 and 10.2% from 2020/21 to 2021/22.

In comparison GSENZH sales growth in DEESC was 9.6% and 11.3% respectively.

Figure 2: Employment 2019/20 to 2021/22

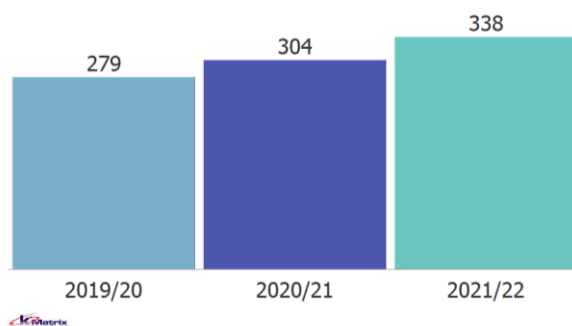


HertsLEP LEP DEESC employment in 2021/22 was 12,135, up from 9,953 in 2019/20.

Annual employment growth in HertsLEP LEP DEESC was 8.4% from 2019/20 to 2020/21 and 12.5% from 2020/21 to 2021/22.

In comparison GSENZH employment growth in DEESC was 7.7% and 13.3% respectively.

Figure 3: Companies 2019/20 to 2021/22



HertsLEP LEP DEESC company count in 2021/22 was 338, up from 279 in 2019/20.

Annual company growth in HertsLEP LEP DEESC was 9.0% from 2019/20 to 2020/21 and 11.2% from 2020/21 to 2021/22.

In comparison GSENZH company growth in LCEGS was 6.2% and 11.3% respectively.

Growth in all three measures in the HertsLEP area was stronger between 2019/20 and 2021/22, then slower between 2020/21 and 2021/22 when compared with the GSENZH as a whole.

1.2 HertsLEP DEESC at Level 1

The analysis in this section of the report focuses on the Level 1 split of DEESC in the HertsLEP for each of the last three years, along with the activities within those sub-sectors.

1.2.1 HertsLEP DEESC (Level 1)

Figure 4: Sales 2019/20 to 2021/22 in £m (Level 1)

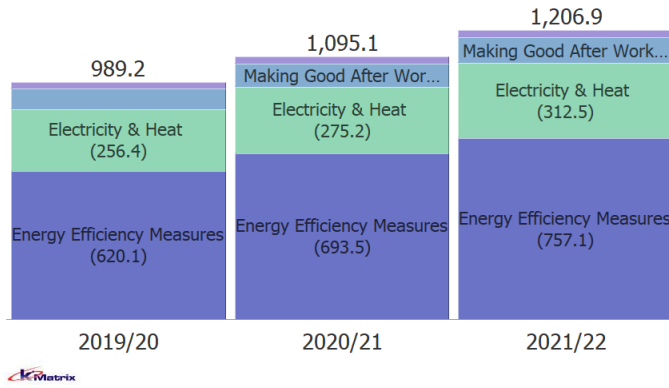


Figure 4 shows the three-year DEESC sales split by Level 1.

In 2021/22 the split was 63% Energy Efficiency Measures, 26% Electricity & Heat, 9% Making Good After Works and 3% Advisory & Related Services. The split has not changed by more than one percentage point since 2019/20 and compares with the GSENZH split of 62%, 26% 9% and 2%.

Figure 5: Employment 2019/20 to 2021/22 (Level 1)

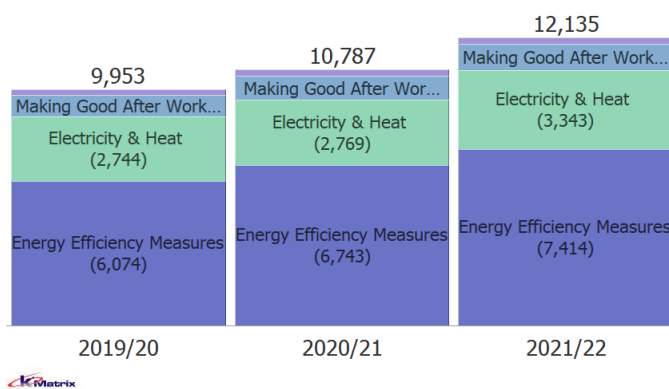


Figure 5 shows the three-year employment split by Level 1.

In 2021/22 the split was 63% Energy Efficiency Measures, 26% Electricity & Heat, 9% Making Good After Works and 3% Advisory & Related Services. The split has not changed by more than one percentage point since 2019/20 and compares with the GSENZH split of 62%, 26% 9% and 2%.

Figure 6: Companies 2019/20 to 2021/22 (Level 1)

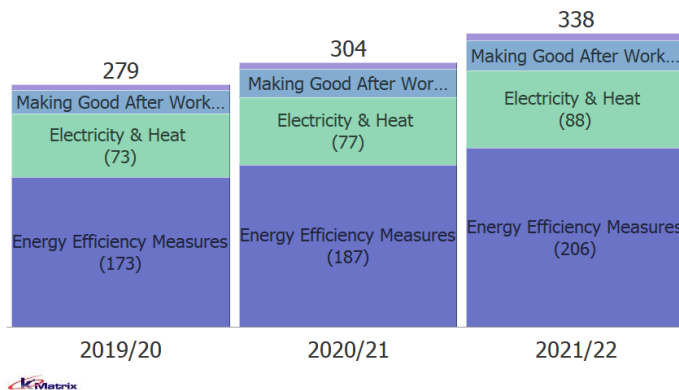


Figure 6 shows the three-year company split by Level 1.

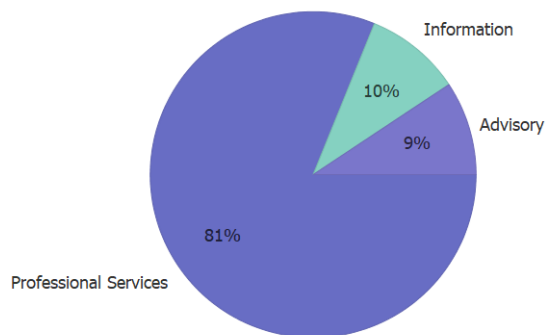
In 2021/22 the split was 63% Energy Efficiency Measures, 26% Electricity & Heat, 9% Making Good After Works and 3% Advisory & Related Services. The split has not changed by more than one percentage point since 2019/20 and compares with the GSENZH split of 62%, 26% 9% and 2%.

In 2021/22 UK DEESC sales was split – 63% Energy Efficiency Measures, 24% Electricity & Heat, 10% Making Good After Works and 3% Advisory & Related Services.

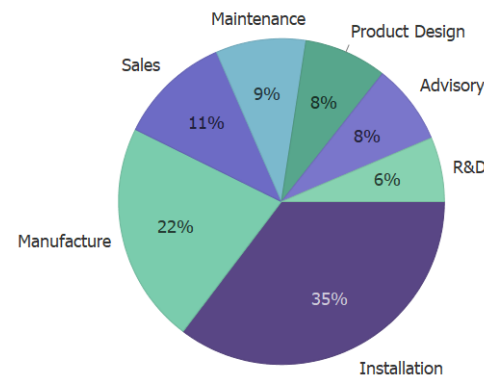
1.2.2 HertsLEP DEESC Activity Codes

Figure 7: DEESC Sales Split by Activity Code 2021/22 (Level 1)

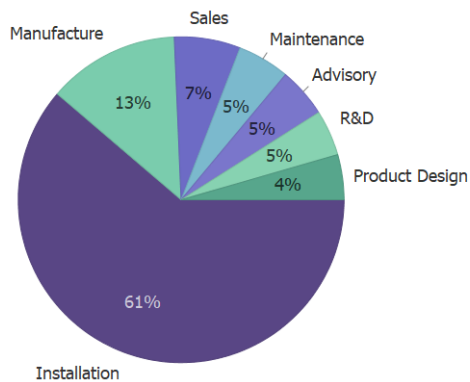
Advisory & Related Services



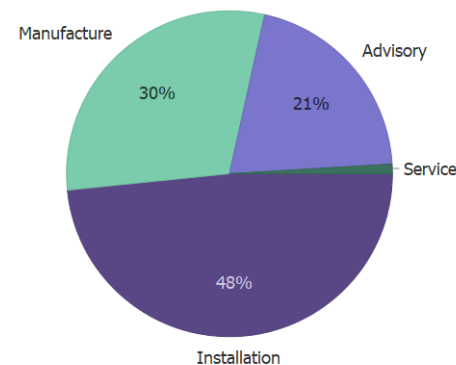
Electricity & Heat



Energy Efficiency Measures



Making Good After Works



Activities vary by Level 1 sub-sector (Figure 7), with the largest activity code being Installation for Energy Efficiency Measures 61%, Making Good After Works 48% and Electricity and Heat 35%, while Professional Services is the largest activity within Advisory and Related Services 81%. This split is within one percentage point of the wider GSENZH region.

1.3 HertsLEP DEESC Level 1 – Energy Efficiency Measures

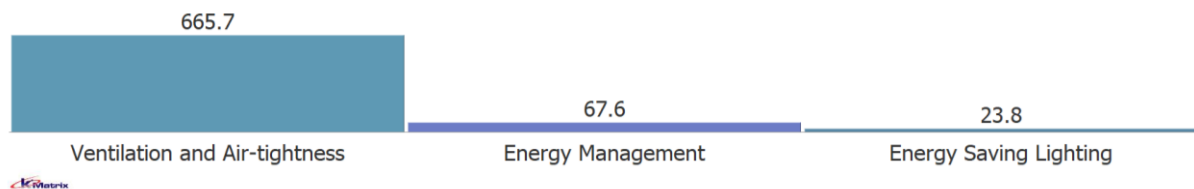
In this section we look at the Energy Efficiency Measures market in greater detail. Initially we split the market into three further sub-sectors (Level 2) and then look at the Level 2 sub-sectors in more detail, then by activity code and then the sub-sectors within Level 3. Sub-sectors within Energy Efficiency Measures are shown in Table 1.

Table 1: Level 2 and Level 3 sub-sectors within Energy Efficiency Measures

Level 2	Level 3
Energy Management	Energy Management Systems
	Home Automation
	Home Energy Systems Integration
	Smart Heating Controls
Energy Saving Lighting	Energy Saving Lighting Equipment
Ventilation & Air-tightness	Energy Efficient Windows
	External Cavity Wall Insulation
	External Wall Insulated Cladding
	Floor Insulation
	Heating System Insulation (ducting/pipework/cylinders)
	Insulated Doors
	Internal Wall Insulation
	Park Home Insulation
	Roof/Loft Insulation
	Roofing
	Ventilation and Heat Recovery Systems

1.3.1 Energy Efficiency Measures (Level 2)

Figure 8: Sales 2021/22 in £m (Level 2)



Energy Efficiency Measures is further sub-divided into three sub-sectors, Ventilation & Air-tightness 88%, Energy Management 9% and Energy Saving Lighting 3% (Figure 8).

Each of these three sub-sectors grew between 2019/20 and 2021/22: Ventilation & Air-tightness from £545.0m to £665.7m; Energy Management from £55.7m to £67.6m and Energy Saving Lighting from £19.4m to £23.8m.

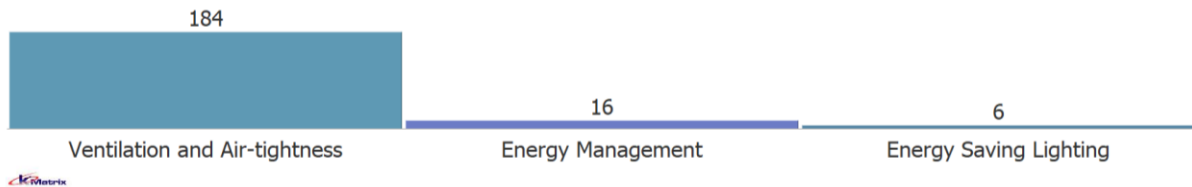
Figure 9: Employment 2021/22 (Level 2)



Employment within the three sub-sectors are: Ventilation & Air-tightness 88%, Energy Management 9% and Energy Saving Lighting 3% (Figure 9).

Each of these three sub-sectors grew between 2019/20 and 2021/22: Ventilation & Air-tightness from 5,343 to 6,527; Energy Management from 549 to 666 and Energy Saving Lighting from 182 to 222.

Figure 10: Companies 2021/22 (Level 2)

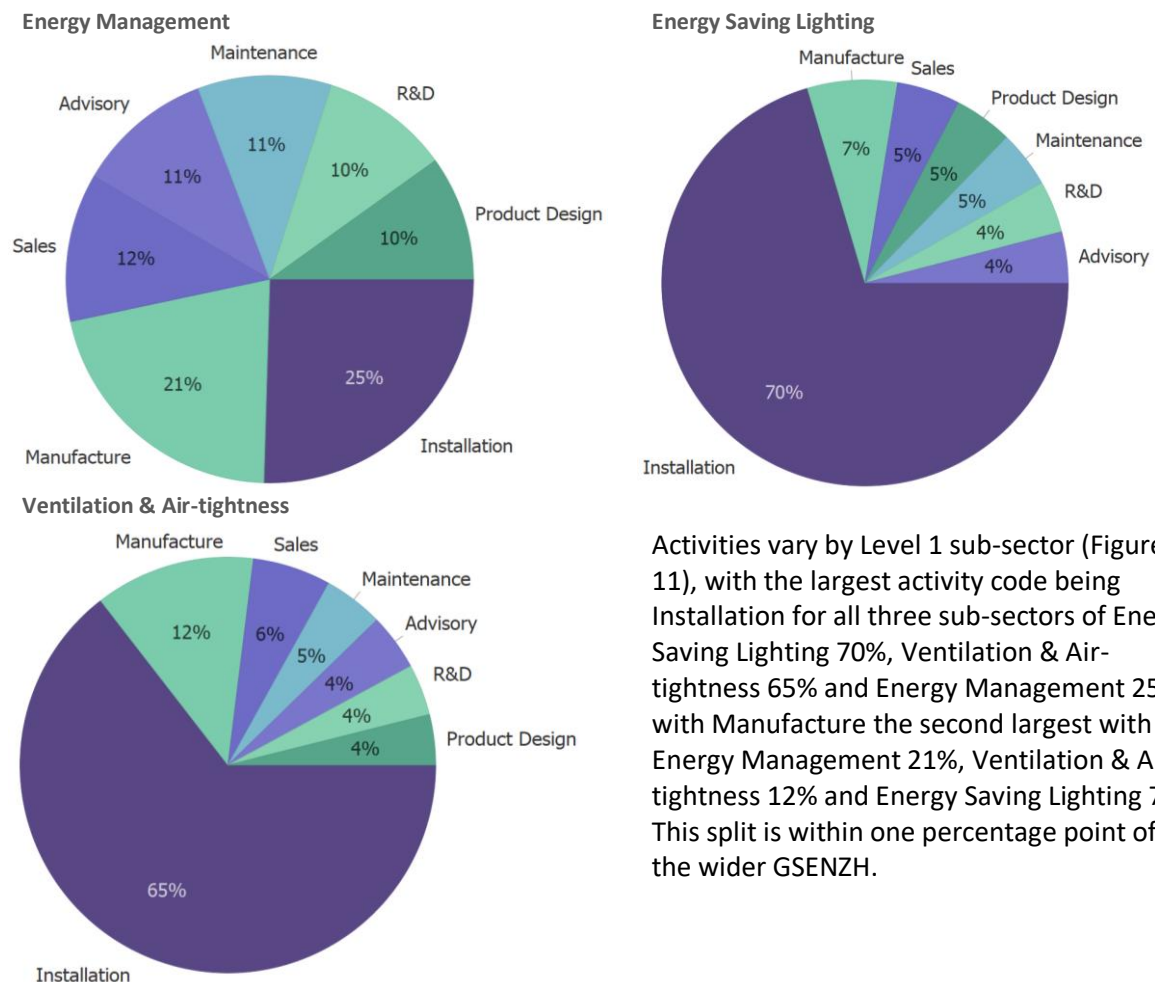


Employment within the three sub-sectors are: Ventilation & Air-tightness 89%, Energy Management 8% and Energy Saving Lighting 3%.

Only Ventilation & Air-tightness grew between 2019/20 and 2021/22, from 151 to 184, while Energy Management remained on 16 and Energy Saving Lighting remained on 6 (Figure 10).

1.3.2 Energy Efficiency Measures Market by Activity Code

Figure 11: Energy Efficiency Measures Sales Split by Activity Code 2021/22 (Level 1)



Activities vary by Level 1 sub-sector (Figure 11), with the largest activity code being Installation for all three sub-sectors of Energy Saving Lighting 70%, Ventilation & Air-tightness 65% and Energy Management 25%, with Manufacture the second largest with Energy Management 21%, Ventilation & Air-tightness 12% and Energy Saving Lighting 7%. This split is within one percentage point of the wider GSENZH.

1.3.3 Energy Efficiency Measures Market at Level 3

Figure 12: Summary of metrics for 2021/22 for Energy Efficiency Measures, Level 2 sub-sectors at Level 3

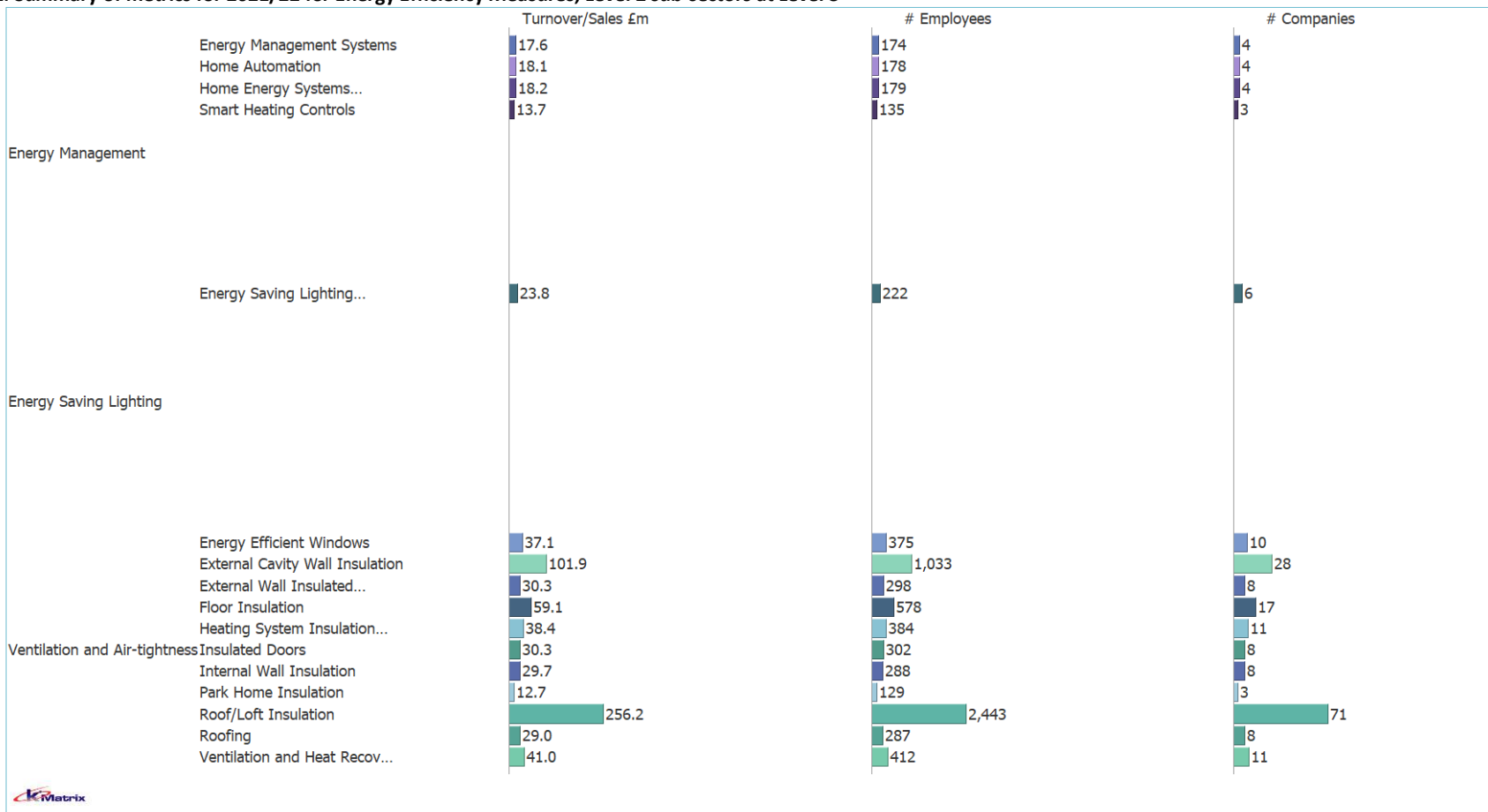


Figure 12 shows a summary of the Sales, Companies and Employees for these Level 2 sub-sectors, broken out into their Level 3 sub-sectors.

Ventilation & Air-tightness is the largest Level 2 sub-sector and Roof/Loft Insulation is the largest of its eleven Level 3 sub-sectors, making up 38% of the market. Example companies in this sub-sector would include insulation manufacturers, agents and installers.

Energy Management has four sub-sectors at level 3, with Home Energy Systems Integration and Home Automation both holding 27% of the market share, Energy Management Systems holding 26% and Smart Heating Controls holding 20% of the market. Example companies in this sub-sector would include design, manufacture, supply, installation and maintenance activities.

Energy Saving Lighting only has one sub-sector, Energy Saving Lighting Equipment. Example companies in this sub-sector would include design, manufacture, agents and installers.

1.4 HertsLEP’s DEESC Level 1 – Electricity and Heat

In this section we look at the Electricity and Heat market in greater detail. Initially we split the market into thirteen further sub-sectors (Level 2) and then look at the Level 2 sub-sectors in more detail, then by activity code and then the sub-sectors within Level 3.

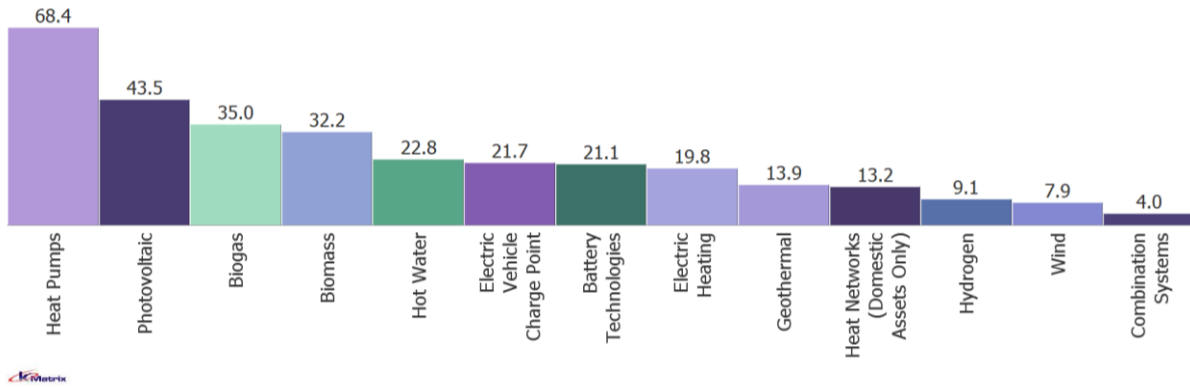
Sub-sectors within Electricity and Heat are shown in Table 2.

Table 2: Level 2 and Level 3 sub-sectors within Electricity and Heat

Level 2	Level 3
Battery Technologies	Electrical Batteries
	Thermal Batteries (Latent Heat Storage)
	Thermal Batteries (Thermochemical Heat Storage)
	Thermal Stores (Sensible Heat Storage)
Biogas	Biogas Boilers and Related systems
	Biogas Energy Systems
	Biogas Furnace Systems
	Biogas Plant (Domestic)
Biomass	Biomass Boilers and Related systems
	Biomass Energy Systems
	Biomass Furnace Systems
Combination Systems	Combination Systems Design
	Combination Systems Installation
Electric Heating	High Retention Storage Heaters
Electric Vehicle Charge Point	Off-road Solutions
	On-road Solutions
Geothermal	Horizontal Systems
	Vertical Systems
Heat Networks (Domestic Assets Only)	External Physical Assets
	Internal Physical Assets
Heat Pumps	Air Source Heat Pumps
	Ground Source Heat Pumps
	Water Source Heat Pumps
Hot Water	Hot Water Systems
Hydrogen	Hydrogen Boilers
	Hydrogen Cooking Appliances
	Hydrogen Fuel Cells
Photovoltaic	Photovoltaic PV
	Solar Thermal
Wind	Domestic Small Wind Turbines

1.4.1 Electricity and Heat Market at Level 2

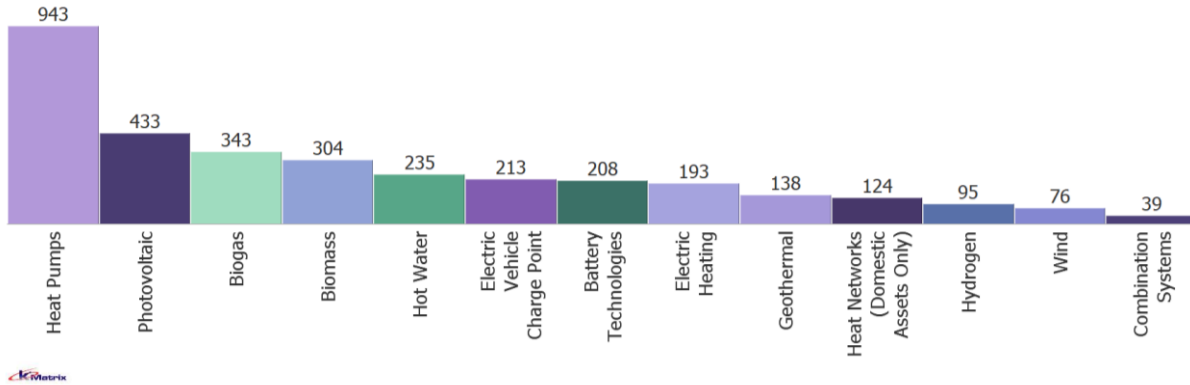
Figure 13: Sales 2021/22 in £m (Level 2)



Electricity and Heat is then split into thirteen sub-sectors, of which six account for 72% of sales (Figure 13). These six are made up of Heat Pumps 22%, Photovoltaic 14%, Biogas 11%, Biomass 10%, Hot Water 7% and Electric Vehicle Charge Point 7%.

Each of these six sub-sectors grew between 2019/20 and 2021/22: Heat Pumps from £56.0m to £68.4m; Photovoltaic from £35.9m to £43.5m, Biogas from £28.7m to £35.0m, Biomass from £26.3m to £32.2m, Hot Water from £18.8m to £22.8m and Electric Vehicle Charge Point from £17.7m to £21.7m.

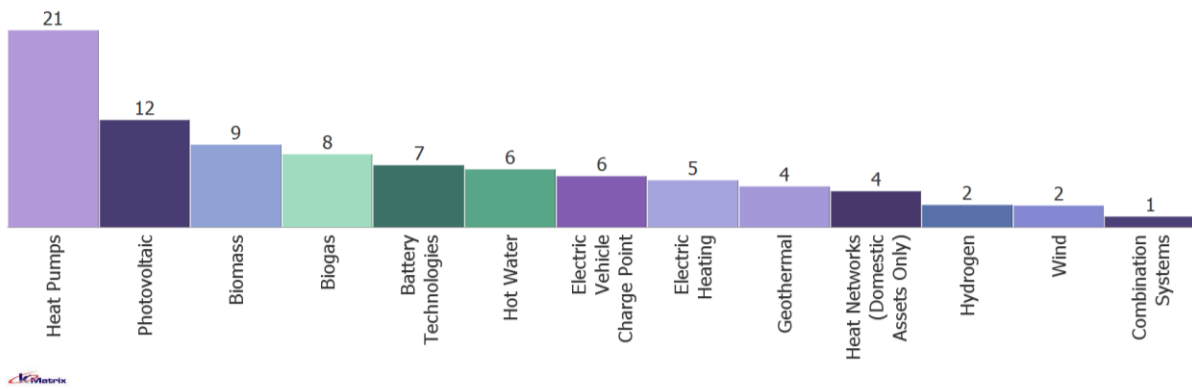
Figure 14: Employment 2021/22 (Level 2)



The same six sub-sectors account for 74% of employment (Figure 14). They are made up of Heat Pumps 28%, Photovoltaic 13%, Biogas 10%, Biomass 9%, Hot Water 7% and Electric Vehicle Charge Point 6%.

Employment in each of these six sub-sectors grew between 2019/20 and 2021/22: Heat Pumps from 773 to 943, Photovoltaic from 358 to 433, Biogas from 282 to 343, Biomass from 249 to 304, Hot Water from 193 to 235 and Electric Vehicle Charge Point From 174 to 213.

Figure 15: Companies 2021/22 (Level 2)



A slightly different six sub-sectors also account for 72% of companies (Figure 15). They are made up of Heat Pumps 24%, Photovoltaic 14%, Biomass 10%, Biogas 9%, Battery Technologies 8% and Hot Water 7%.

Most of these six sub-sectors grew between 2019/20 and 2021/22: Heat Pumps from 16 to 21, Photovoltaic from 10 to 12, Biomass from 8 to 9, Biogas from 7 to 8, battery Technologies from 5 to 7 and Hot Water remained on 6.

1.4.2 Electricity and Heat Market by Activity Code

Figure 16a: Electricity and Heat Sales Split by Activity Code 2021/22 (Level 1)

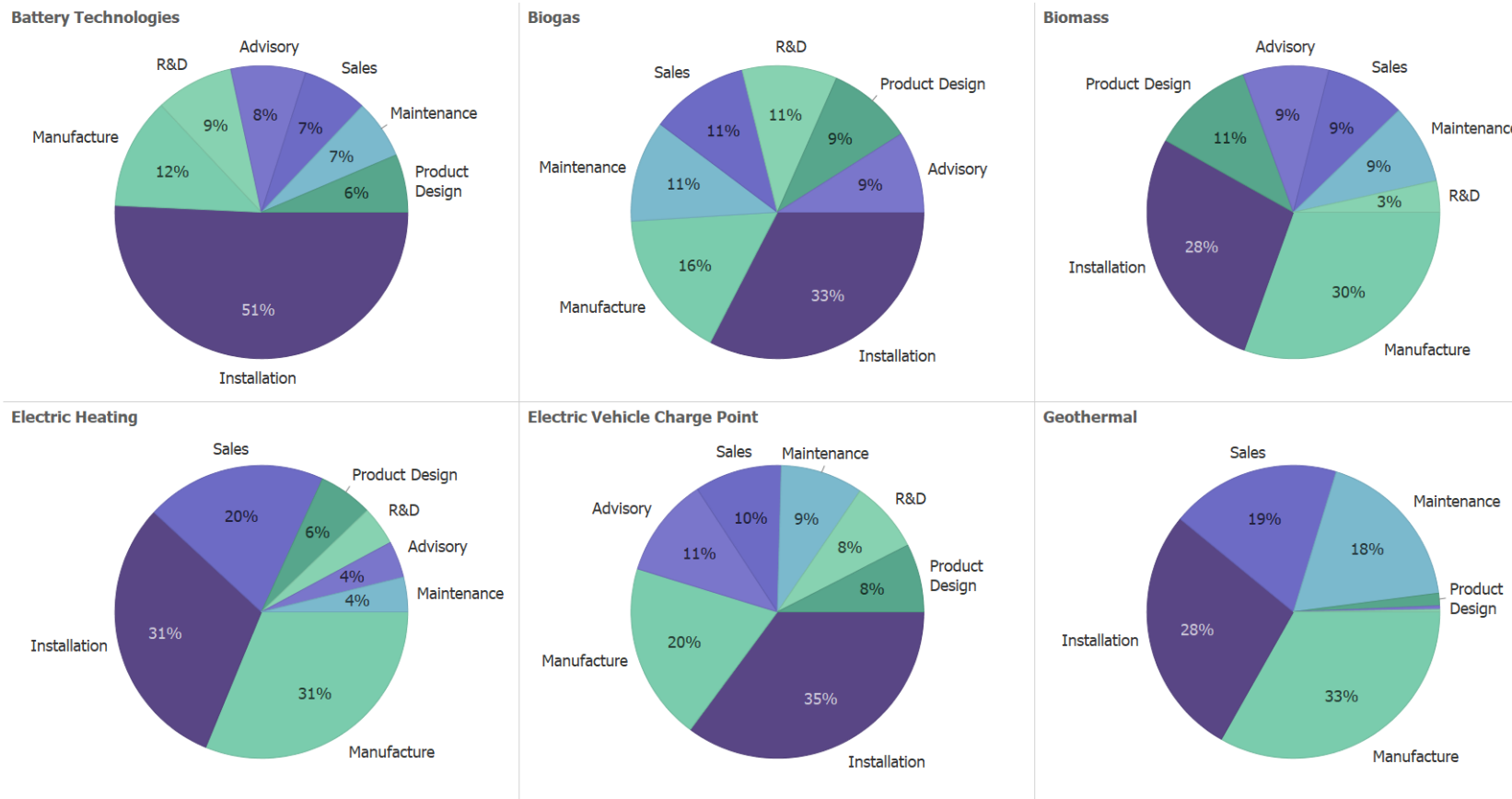
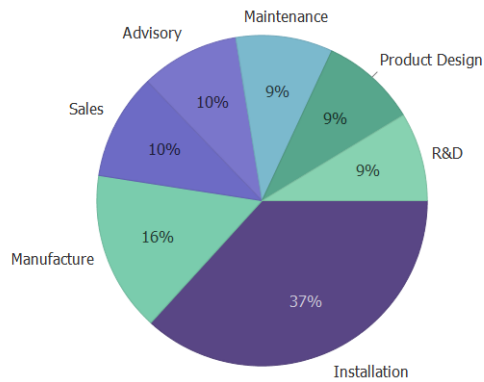
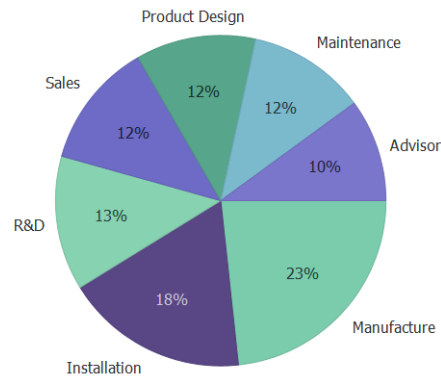


Figure 16b: Electricity and Heat Sales Split by Activity Code 2021/22 (Level 1)

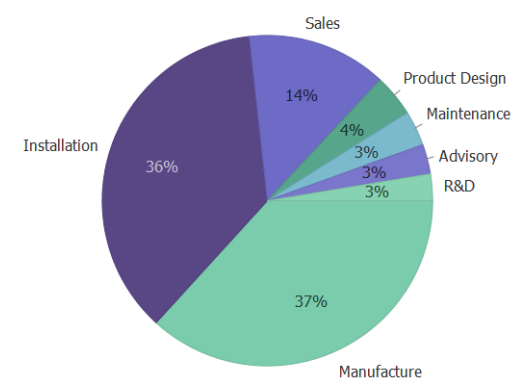
Heat Networks (Domestic Assets Only)



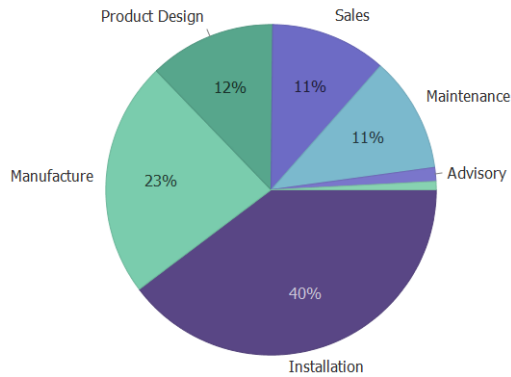
Heat Pumps



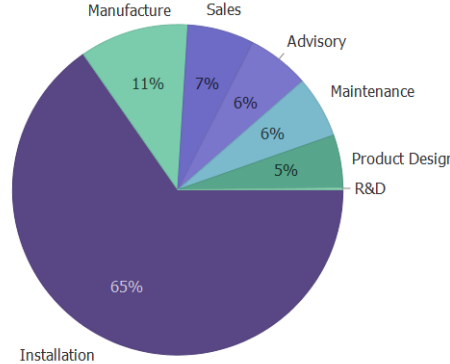
Hot Water



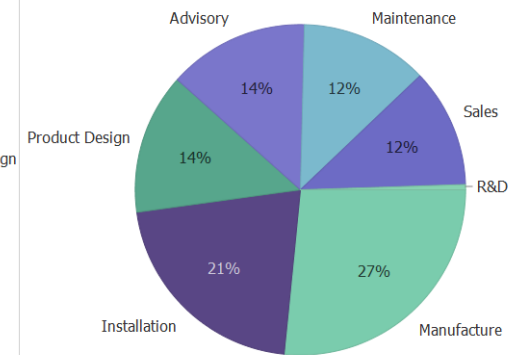
Hydrogen



Photovoltaic



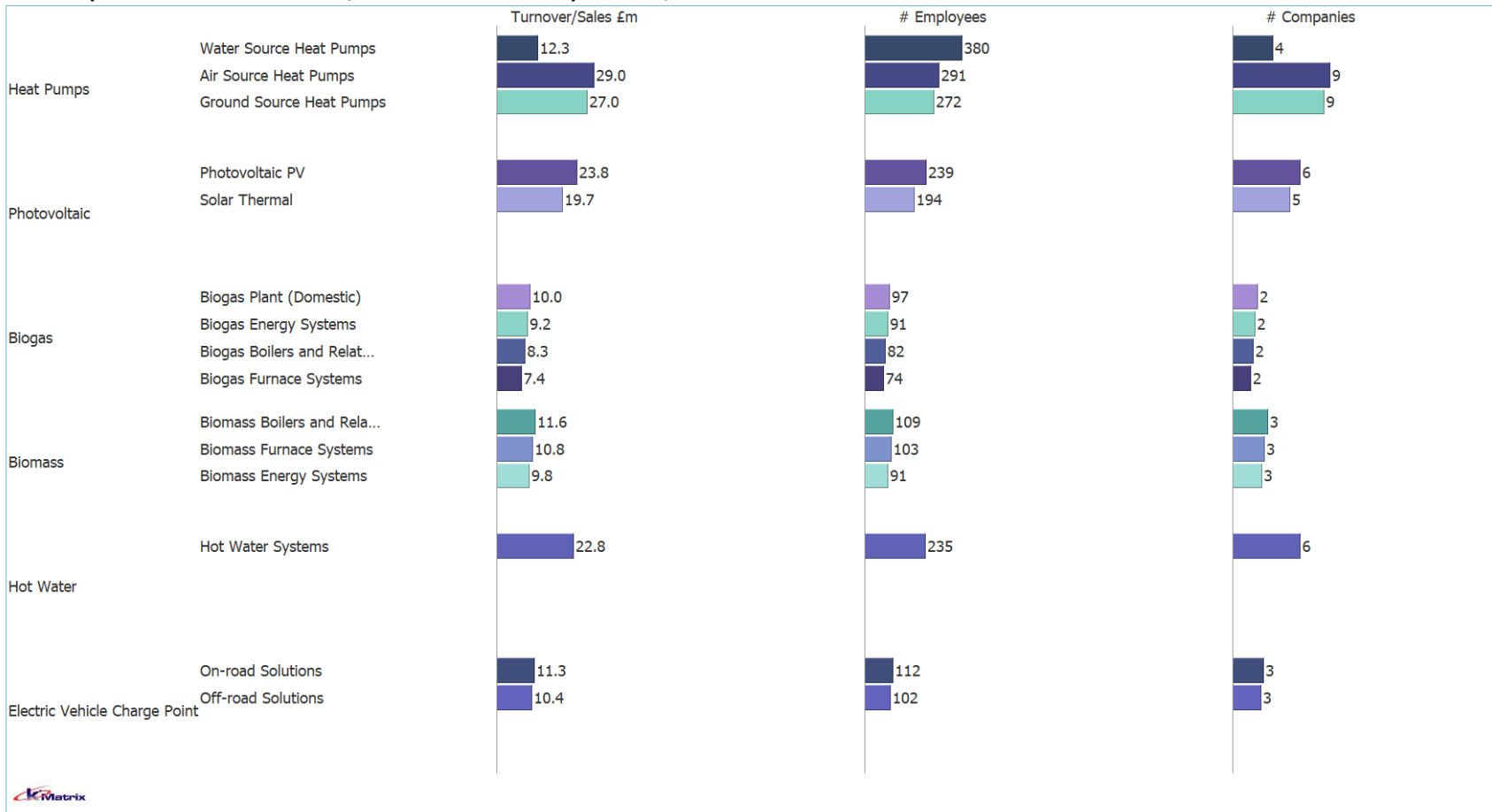
Wind



Activities vary by Level 1 sub-sector (Figure 16), with the largest activity code being Installation for Battery Technologies 51%, Biogas 33%, Electric Vehicle Charge Point 35%, Heat Networks 37%, Hydrogen 40% and Photovoltaic 65% and Manufacture for Biomass 30%, Electric Heating 31%, Geothermal 33%, Heat Pumps 23%, Hot Water 37% and Wind 27%. Combination Systems (where two or more of the above measures are combined) are not included in the Activity Code pie chart and is split Installation 75% and Advisory 25%. These splits are within one percentage point of the wider GSENZH.

1.4.3 Electricity and Heat Market at Level 3

Figure 17: Summary of selected metrics for 2021/22 for selected Electricity and Heat, Level 2 sub-sectors at Level 3



The top six Level 2 sub-sectors for Electricity and Heat are Heat Pumps, Photovoltaic, Biogas, Biomass, Hot Water and Electric Vehicle Charge Point, making up 72% of Sales in the Electricity and Heat market in the HertsLEP LEP. Figure 17 shows a summary of the Sales, Companies and Employees for these Level 2 sub-sectors, broken out into their Level 3 sub-sectors.

Heat Pumps is the largest Level 2 sub-sector with 22% of sales and has three sub-sectors at Level 3, the largest being Air Source Heat Pumps which makes up 42% of sales in this market, followed by Ground Source Heat Pumps with 39% and Water Source with 18%. Example companies include manufacturing of components, installation and maintenance.

Photovoltaic has two sub-sectors at level 3, the largest being Photovoltaic PV with 55% of sales, with Solar Thermal holding 45% of sales in this market. Example companies include predominantly supply and installation, with some manufacture ancillary equipment.

Biogas has four sub-sectors at level 3, the largest being Biogas Plant (Domestic) which makes up 29% of the sales in this market, followed by Biogas Energy Systems with 26%, Biogas Boilers and Related Systems with 24% and Biogas Furnace Systems with 21%. Example companies include supply and installation, manufacture and maintenance.

Biomass has three sub-sectors at level 3, the largest being Biomass Boilers and Related Systems which makes up 36% of the sales in this market, followed by Biomass Furnace Systems with 34% and Biomass Energy Systems with 30% of the market. Example companies include manufacturers, installers and consultancies.

Hot Water has only one sub-sector at level 3, the Hot Water Systems, example companies include manufacturers and installers.

Electric Vehicle Charge Points has two sub-sectors at level 3, with On-road Solutions making up 52% of the sales in this market, and Off-road Solutions making up 48% of the market. Example companies include installers, manufacturers and consultancies.

1.5 HertsLEP’s DEESC Level 1 – Making Good After Works

In this section we look at the Making Good After Works market in greater detail. Initially we split the market into thirteen further sub-sectors (Level 2) and then look at the Level 2 sub-sectors in more detail, then by activity code and then the sub-sectors within Level 3.

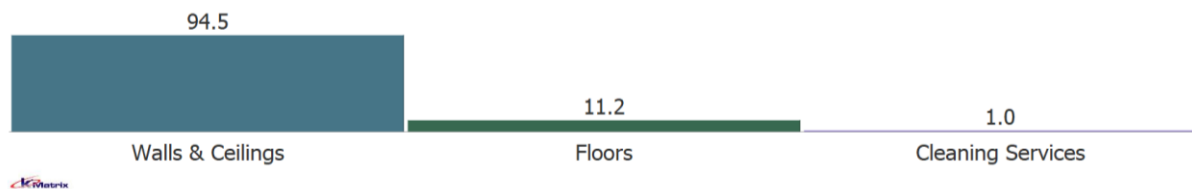
Sub-sectors within Making Good After Works are shown in Table 3.

Table 3: Level 2 and Level 3 sub-sectors within Making Good After Works

Level 2	Level 3
Cleaning Services	Contract Cleaning
Floors	Carpet Fitting
	Hard Flooring
Walls & Ceilings	Painting and Decorating
	Plastering & Plasterboarding

1.5.1 Making Good After Works Market at Level 2

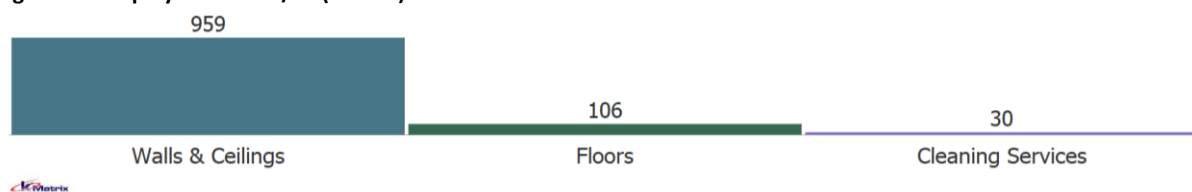
Figure 18: Sales 2021/22 in £m (Level 2)



Making Good After Works is then split into three sub-sectors (Figure 18), these are Walls & Ceilings 89%, Floors 10% and Cleaning Services 1%.

Each of these three sub-sectors grew between 2019/20 and 2021/22: Walls & Ceilings from £77.7m to £94.5m; Floors from £9.2m to £11.2m and Cleaning Services from £0.9m to £1.0m.

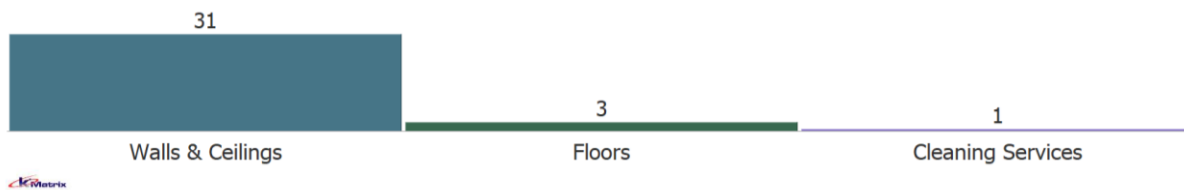
Figure 19: Employment 2021/22 (Level 2)



Employment within Making Good After Works are: Walls & Ceilings 88%, Floors 10% and Cleaning Services 3% (Figure 19).

Each of these three sub-sectors grew between 2019/20 and 2021/22: Walls & Ceilings from 792 to 959; Floors from 87 to 106 and Cleaning Services from 25 to 30.

Figure 20: Companies 2021/22 (Level 2)

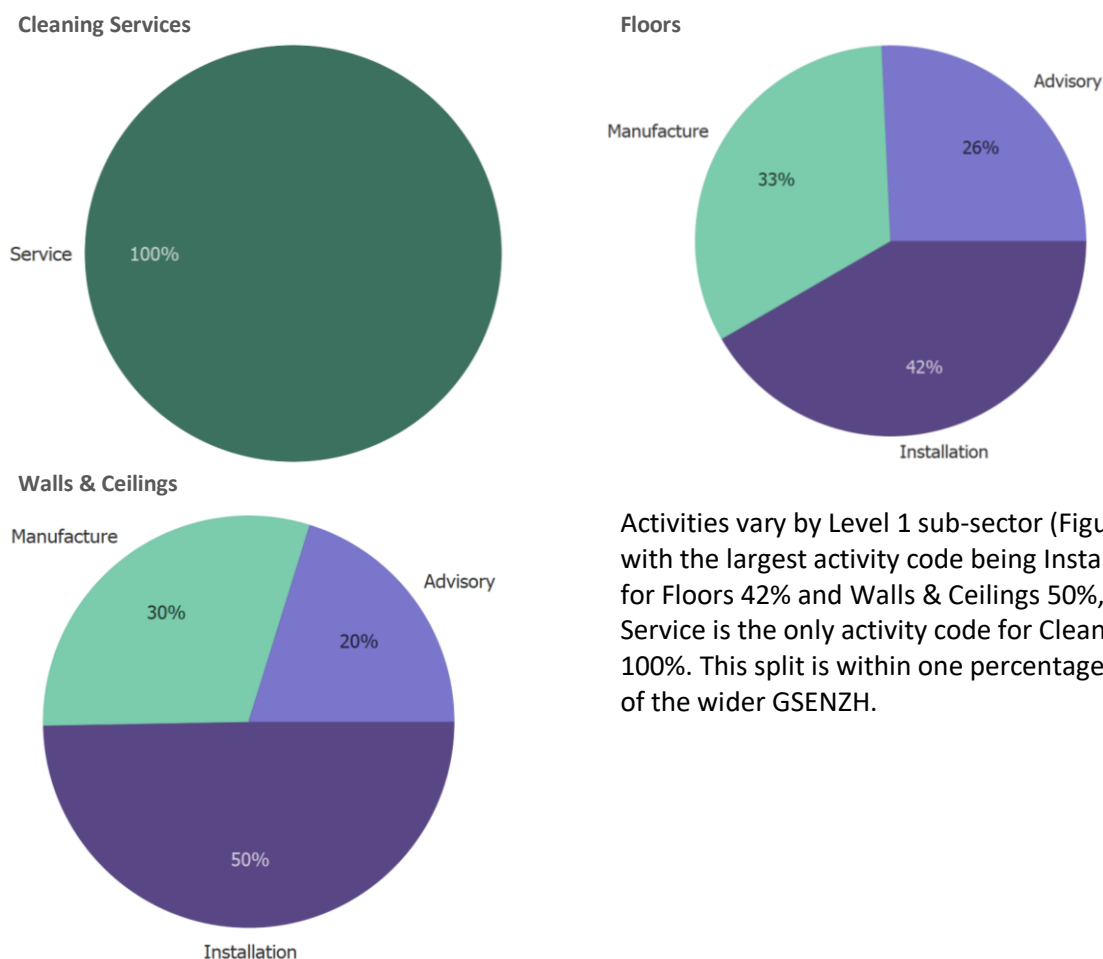


Companies within Making Good After Works are: Walls & Ceilings 89%, Floors 9% and Cleaning Services 3% (Figure 20).

Only one sub-sector grew between 2019/20 and 2021/22: Walls & Ceilings from 24 to 31, Floors and Cleaning Services remained on 3 and 1.

1.5.2 Making Good After Works Market by Activity Code

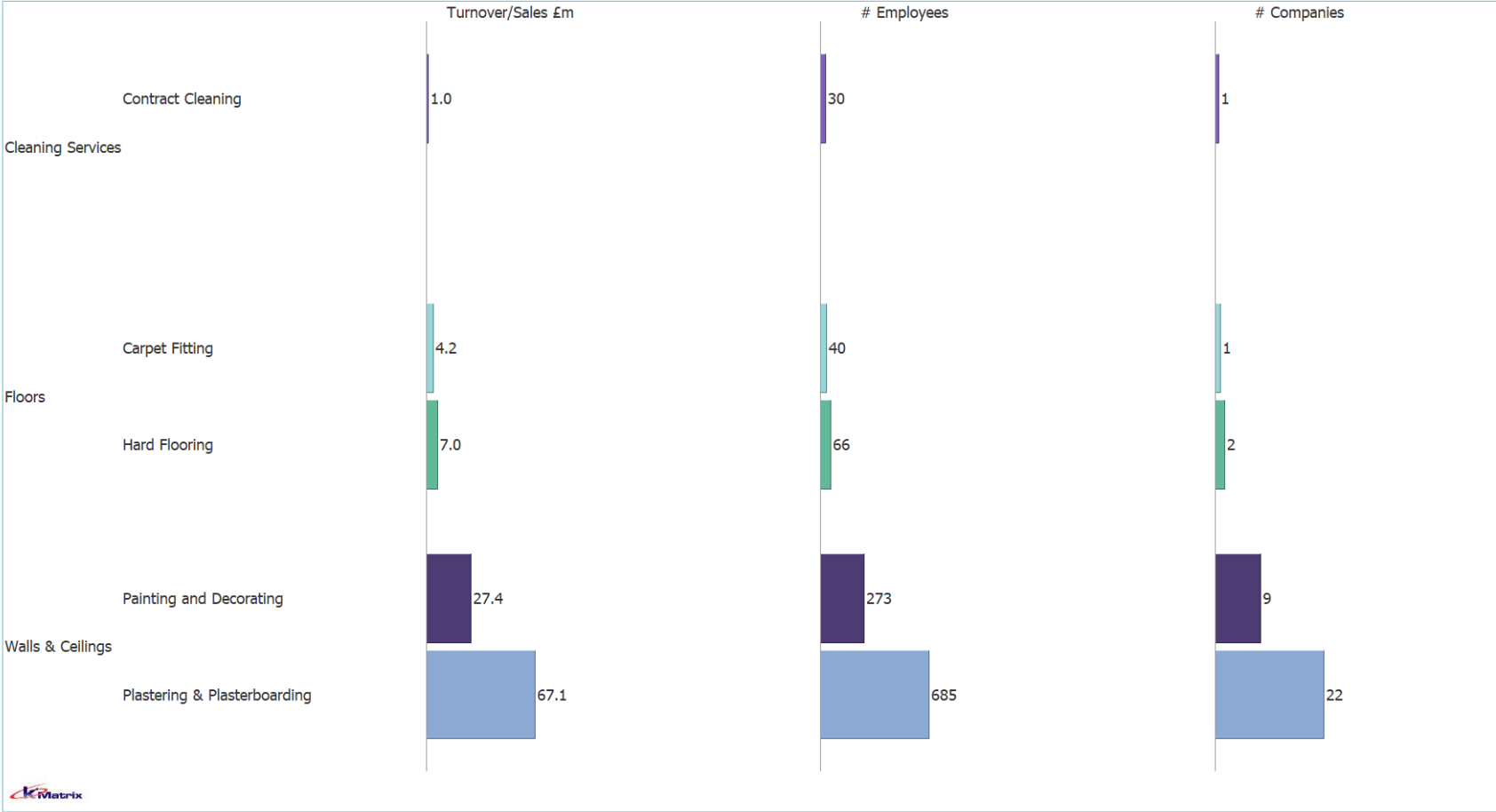
Figure 21: Making Good After Works Sales Split by Activity Code 2021/22 (Level 1)



Activities vary by Level 1 sub-sector (Figure 21), with the largest activity code being Installation for Floors 42% and Walls & Ceilings 50%, while Service is the only activity code for Cleaning 100%. This split is within one percentage point of the wider GSENZH.

1.5.2 Making Good After Works Market at Level 3

Figure 22: Summary of selected metrics for 2021/22 for selected Making Good After Works, Level 2 sub-sectors at Level 3



Walls & Ceilings is the largest sub-sector with 89% of sales and has two sub-sectors at Level 3 (Figure 22), the largest being Plastering & Plasterboarding which makes up 71% of sales in this market, followed by Painting and Decorating with 29%. Example companies include those installing plasterboard, plasterers and painters and decorators, alongside companies manufacturing the plasterboard and paint and those providing advisory services.

Floors has two sub-sectors at level 3, the largest being Hard flooring with 63% of sales, with Carpet Fitting holding 38% of sales in this market. Example companies include those replacing flooring damaged during retrofit activities, alongside the proportion of companies manufacturing hard floors and carpets which are retrofitted.

Cleaning Services is comprised of a single sub-sector, Contract Cleaning with 100% of the sales in this market. Example companies are those contracted to clean during and after the retrofit process, often between final installation and before painting and decorating.

1.6 HertsLEP’s DEESC Level 1 – Advisory and Related Services

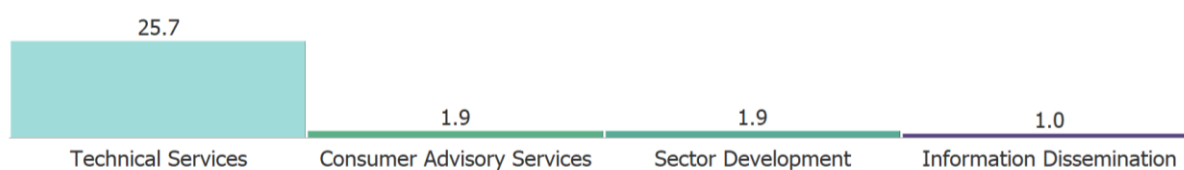
In this section we look at the Advisory and Related Services market in greater detail. Initially we split the market into four further sub-sectors (Level 2) and then look at the Level 2 sub-sectors in more detail, then by activity code and then the sub-sectors within Level 3. Sub-sectors within Advisory and Related Services are shown in Table 4.

Table 4: Level 2 and Level 3 sub-sectors within Advisory and Related Services

Level 2	Level 3
Consumer Advisory Services	After Sales Support
	Energy Tariff Advice
	Funding Advice
Information Dissemination	Industry-oriented Publications
	Newscasting (early stage project engagement activities)
	Societal Engagement Campaigns (e.g. info boards)
Sector Development	Business Model Development
	Business Support & Development
	Sales Strategy Training
	Societal Behaviour Studies
Technical Services	Architectural Services
	Building Surveys
	Environmental Consultancy
	Monitoring & Evaluation
	Planning Application Services (Listed buildings etc)
	Project Planning (Strategy/Approach)
	Retrofit Coordination
	Specification
Technical Advice	

1.6.1 Advisory and Related Services Market at Level 2

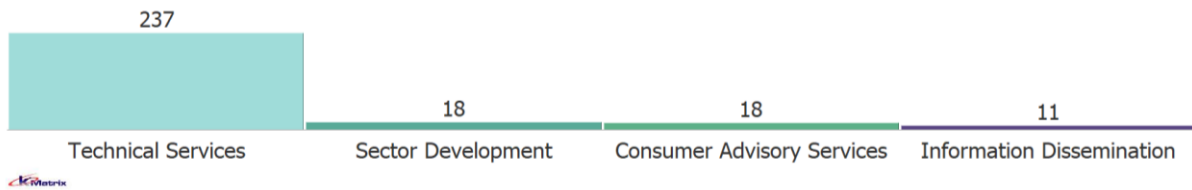
Figure 23: Sales 2021/22 in £m (Level 2)



Advisory and Related services is then split into four sub-sectors, of which, Technical Services accounts for 84% of sales (Figure 23). The other three sub-sectors are Sector Development 6%, Consumer and Advisory Services 6% and Information Dissemination 3%.

Each of these four sub-sectors grew between 2019/20 and 2021/22: Technical Services from £20.9m to £25.7m; Sector Development from £1.5m to £1.9m, Customer Advisory Services from £1.5m to £1.9m and Information Dissemination from £0.9m to £1.0m.

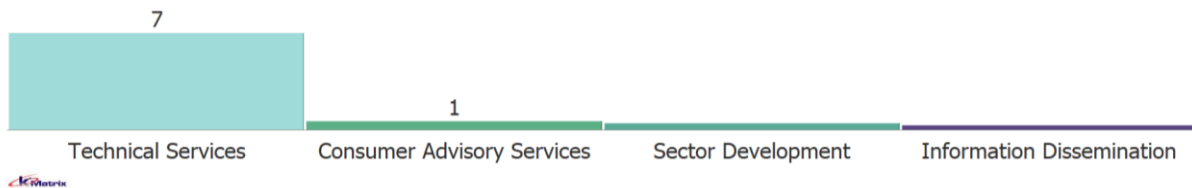
Figure 24: Employment 2021/22 (Level 2)



Technical Services accounts for 84% of employment (Figure 24). The other three sub-sectors are made up of Sector Development 6%, Consumer and Advisory Services 6% and Information Dissemination 4%.

Employment in each of these four sub-sectors grew between 2019/20 and 2021/22: Technical Services from 193 to 237, Sector Development from 15 to 18, Customer Advisory Services from 14 to 18, and Information Dissemination from 9 to 11.

Figure 25: Companies 2021/22 (Level 2)



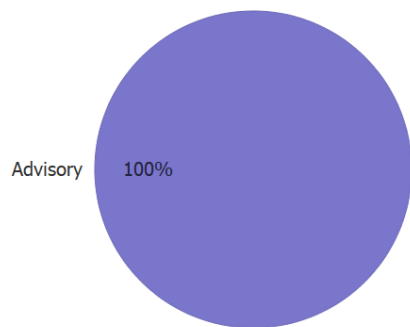
Technical Services accounts for 88% of companies (Figure 25) and Consumer and Advisory Services 13%.

Both of these sub-sectors grew between 2019/20 and 2021/22: Technical Services from 6 to 7, with Customer Advisory Services from 0 to 1. Sector Development and Information Dissemination have a company count of 0 because these are services from various companies, delivered by the equivalent of 18 and 11 employees from various organisations, however counting all of those organisations as companies would give a false impression of the sub-sector being larger than it is. The sales are opportunistic and not necessarily regular by their nature.

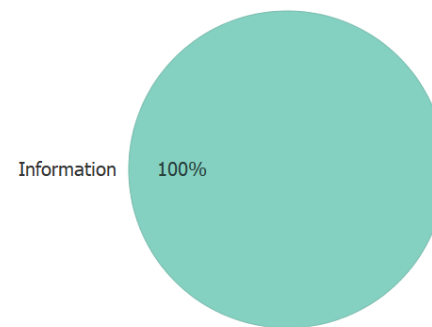
1.6.2 Advisory and Related Services Market by Activity Code

Figure 26: Advisory and Related Services Sales Split by Activity Code 2021/22 (Level 1)

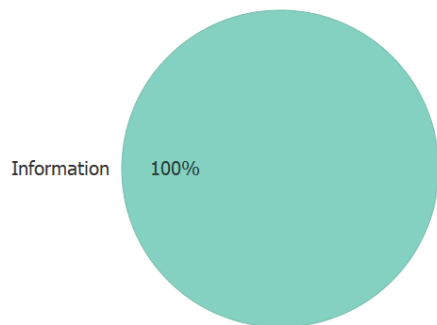
Consumer Advisory Services



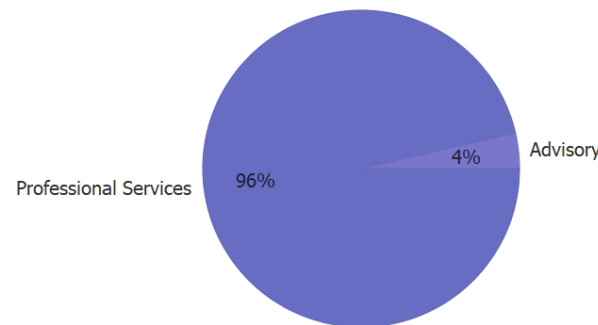
Information Dissemination



Sector Development



Technical Services



Activities vary by Level 1 sub-sector (Figure 26), with Advisory being the only activity within Consumer Advisory Services 100%, Information being the only activity within Information Dissemination 100% and Sector Development and Professional Services being the largest activity within Technical Services 96%. This is a similar split to the wider GSENZH.

1.6.3 Advisory and Related Services at Level 3

Figure 27: Summary of metrics for 2021/22 for Advisory and Related Services, Level 2 sub-sectors at Level 3



Technical Services is the largest Level 2 sub-sector, making up 84% of the Advisory and Related Services market in the HertsLEP LEP. Figure 27 shows a summary of the Sales, Companies and Employees for these Level 2 sub-sectors, broken out into their Level 3 sub-sectors.

Technical Services has nine sub-sectors at level 3, the largest being Project Planning (Strategy and Approach) which makes up 43% of sales in this market, example companies and activities include construction project management.

Sector Development has four small sub-sectors at level 3, which are relatively evenly balanced, each generating approximately £0.5m in sales.

Consumer Advisory Services has three small sub-sectors at level 3, with After Sales Support holding 53% of the market.

Information Dissemination has three small sub-sectors at level 3, which are relatively evenly balanced, each generating between £0.3m and £0.4m in sales.

1.7 HertsLEP and the GSENZH’s DEESC compared

The HertsLEP accounts for 4.3% of the GSENZH’s DEESC sector.

Figure 28: HertsLEP Measures 2021/22 by Level 1

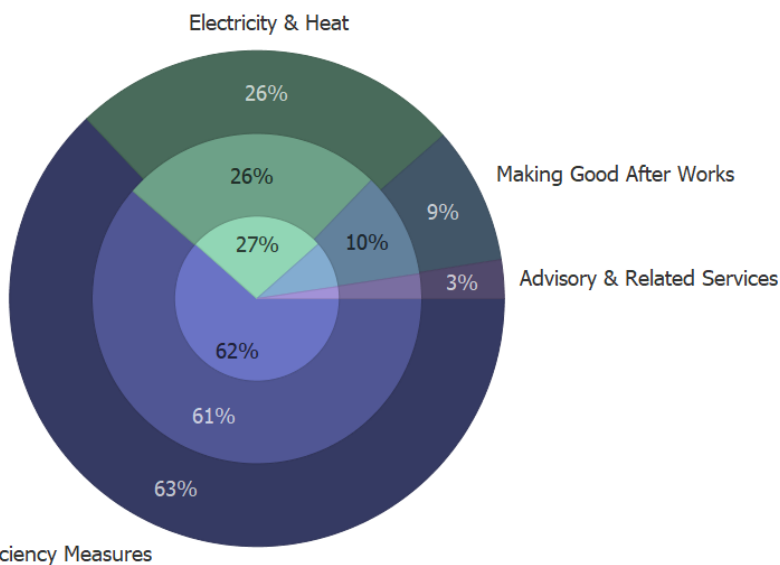
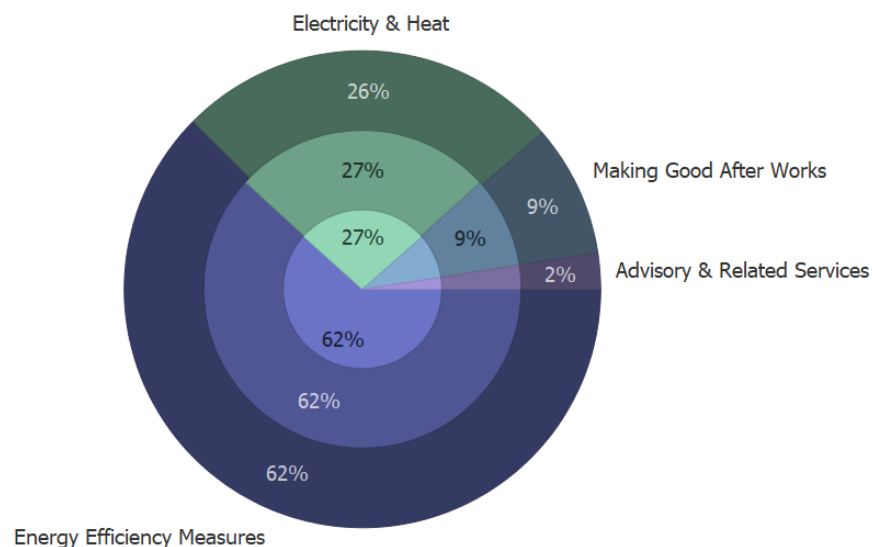


Figure 29: GSENZH Measures 2021/22 by Level 1



Figures 28 and 29 compare the profile of the HertsLEP and the GSENZH’s DEESC activities at Level 1 for sales (outer circle), companies (middle circle) and employment (inner circle). The HertsLEP market is broadly in line with the GSENZH DEESC market, with only one percentage point difference between sub-sectors. The GSENZH market is broadly in line with the UK DEESC market, with a slightly higher proportion within the Electricity and Heat sub-sector in terms of sales than the national average, and slightly less market than average for Electricity and Heat for companies than the national average.

Figure 30: HertsLEP’s DEESC sub-sectors for 2021/22 at Level 2

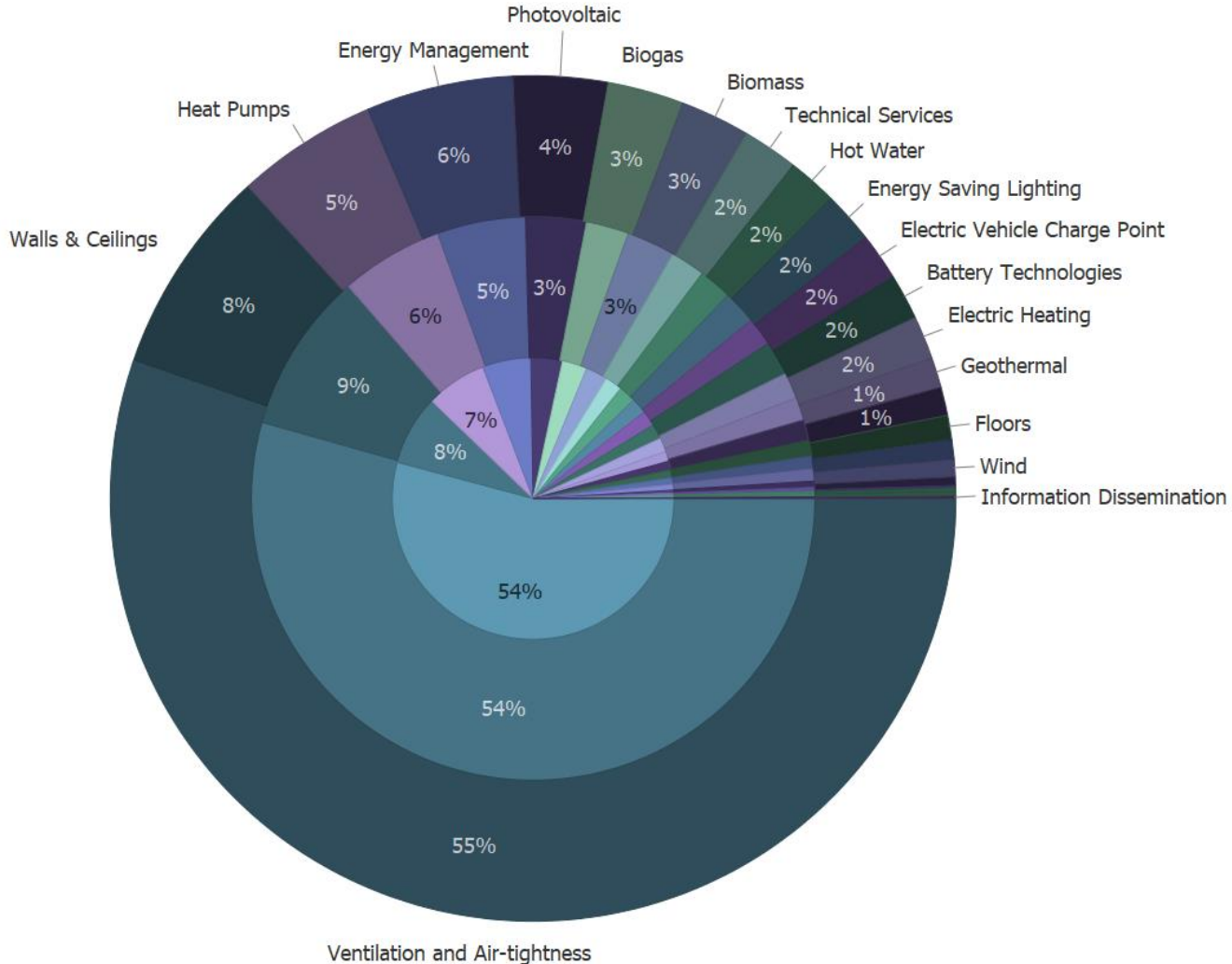
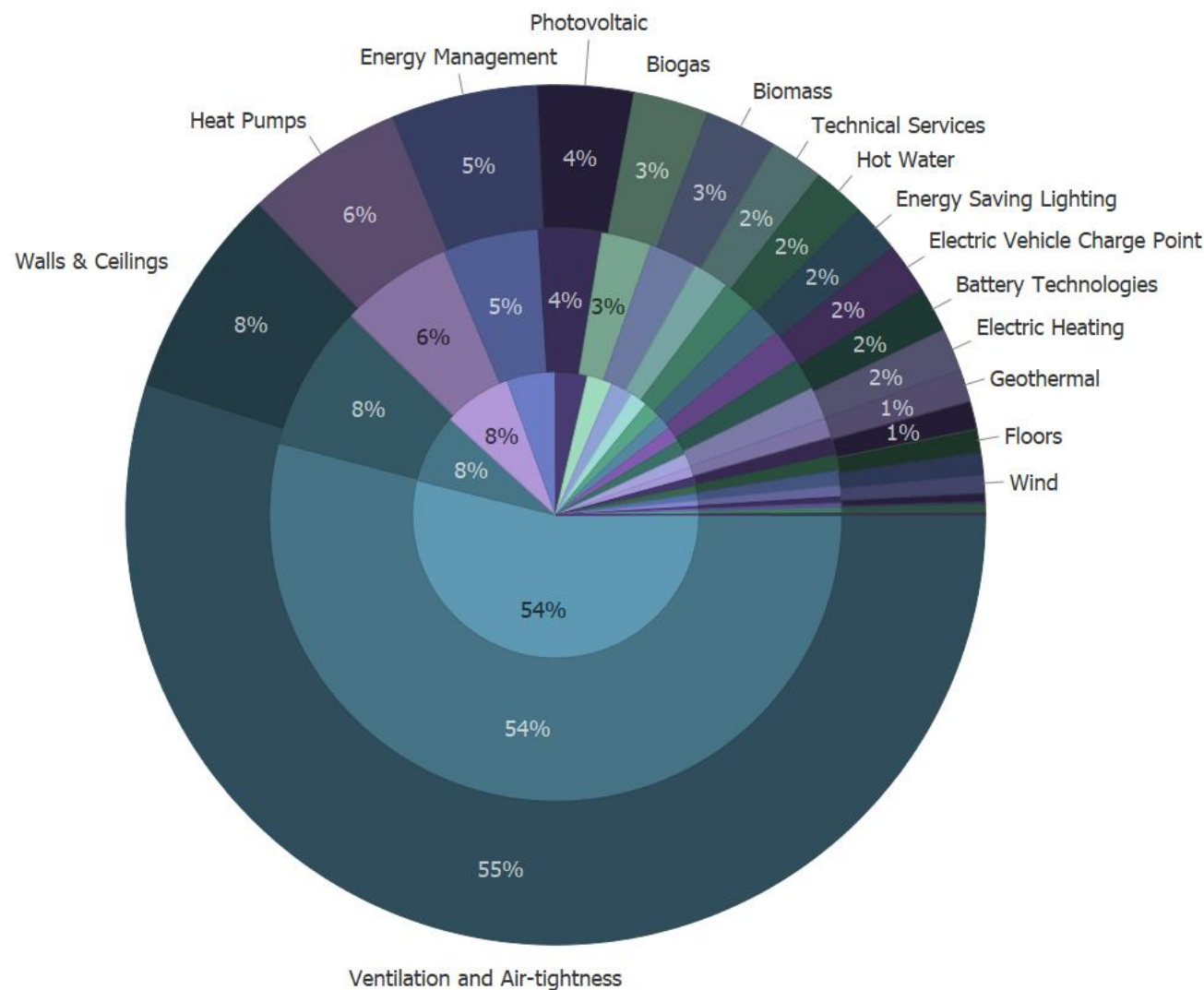


Figure 31: GSENZH's DEESC sub-sectors for 2021/22 at Level 2



Figures 30 and 31 extends the analysis by comparing the profile of the HertsLEP and GSENZH's DEESC activities at Level 2 for sales (outer circle), companies (middle circle) and employment (inner circle).

There are only subtle differences between the two, with the HertsLEP proportions within one percentage point of the GSENZH average across all sub-sectors 55%.

Note: Insulation accounts for between 79%-94% of the Ventilation and Air-tightness sub-sector, depending on definition (e.g., inclusion of insulated windows or doors).

1.8 HertsLEP’s DEESC Investment in R&D

This section examines the investment profile of the HertsLEP at the sector level and Level 1 for 2019/20, 2020/21 and 2021/22 and for Level 2 and the top Level 3 subsectors.

Figure 32: HertsLEP’s DEESC Investment in R&D by Fiscal Year

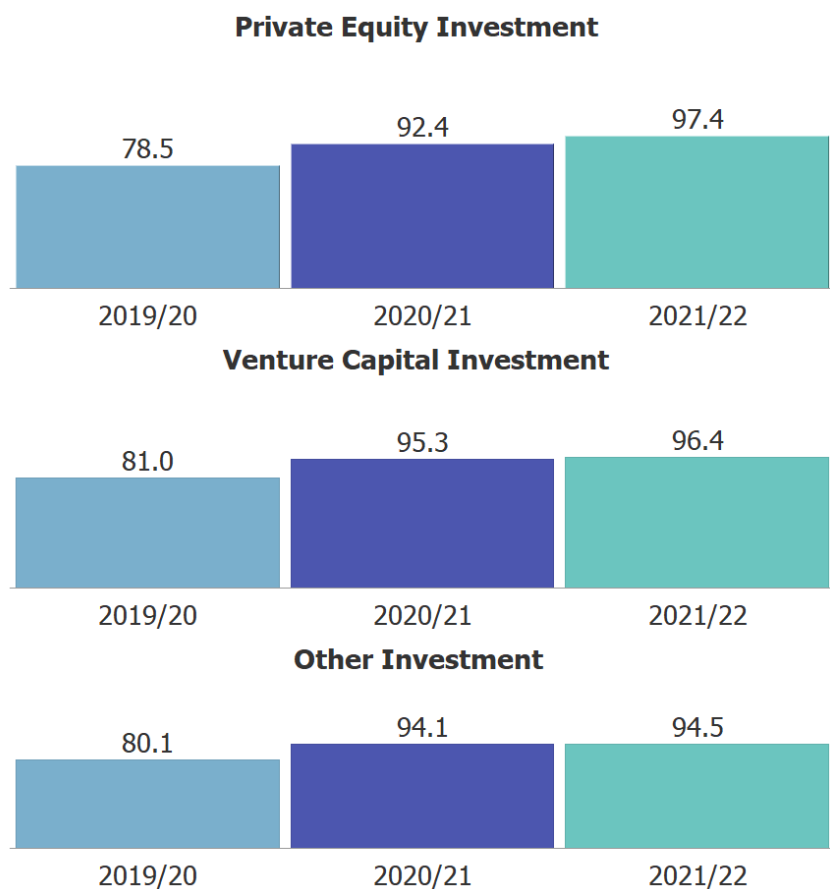


Figure 32 shows the investment for the three financial years of the sector study, made into the whole DEESC sector.

Private Equity Investment has grown from £78.5m in 2019/20 to £97.4m in 2021/22, representing 17.7% growth between 2019/20 and 2020/21 and 5.4% growth between 2020/21 and 2021/22.

By comparison, the GSENZH’s growth rates were 17.6% and 6.4%.

Venture Capital Investment has grown from £81.0m in 2019/20 to £96.4m in 2021/22, representing 17.7% growth between 2019/20 and 2020/21 and 1.2% growth between 2020/21 and 2021/22.

By comparison, the GSENZH’s growth rates were 17.6% and 5.8%.

Other Investment has grown from £80.1m in 2019/20 to £94.5m in 2021/22, representing 17.5% growth between 2019/20 and 2020/21 and 0.4% growth between 2020/21 and 2021/22.

By comparison, the GSENZH’s growth rates were 17.7% and 2.7%.

Figure 33: HertsLEP's DEESC Investment in R&D by Fiscal Year – Level 1

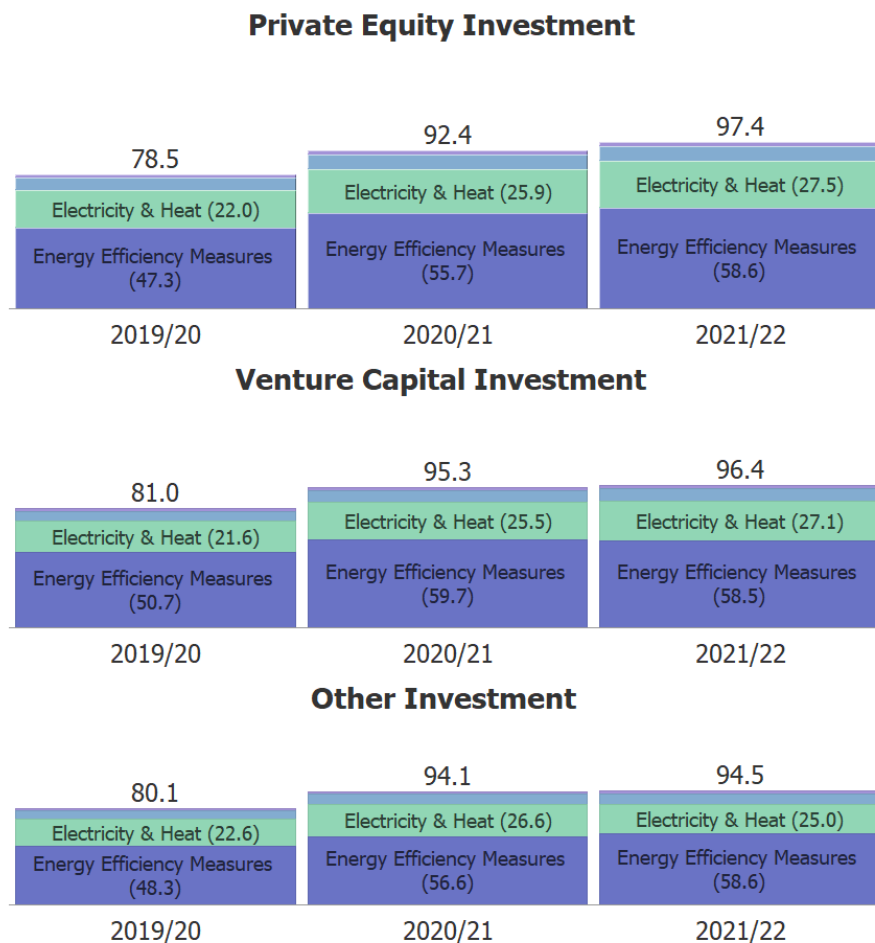


Figure 33 shows the investment for the three financial years of the sector study, made into the DEESC sector, split into Level 1.

Private Equity Investment in 2021/22 was split 60% Energy Efficiency Measures, 28% Electricity & Heat, 9% Making Good After Works and 2% Advisory & Related Services.

This compared with the HertsLEP sales split of 63% Energy Efficiency Measures, 26% Electricity & Heat, 9% Making Good After Works and 3% Advisory & Related Services.

Venture Capital Investment in 2021/22 was split 61% Energy Efficiency Measures, 28% Electricity & Heat, 9% Making Good After Works and 2% Advisory & Related Services.

This compared with the HertsLEP sales split of 63% Energy Efficiency Measures, 26% Electricity & Heat, 9% Making Good After Works and 3% Advisory & Related Services.

Other Investment in 2021/22 was split 62% Energy Efficiency Measures, 26% Electricity & Heat, 9% Making Good After Works and 3% Advisory & Related Services.

This is only one percentage point different to the HertsLEP sales split of 63% Energy Efficiency Measures, 26% Electricity & Heat, 9% Making Good After Works and 3% Advisory & Related Services.

Figure 34: HertsLEP's DEESC Investment in R&D 2021/22 – Level 2 Energy Efficiency Measures

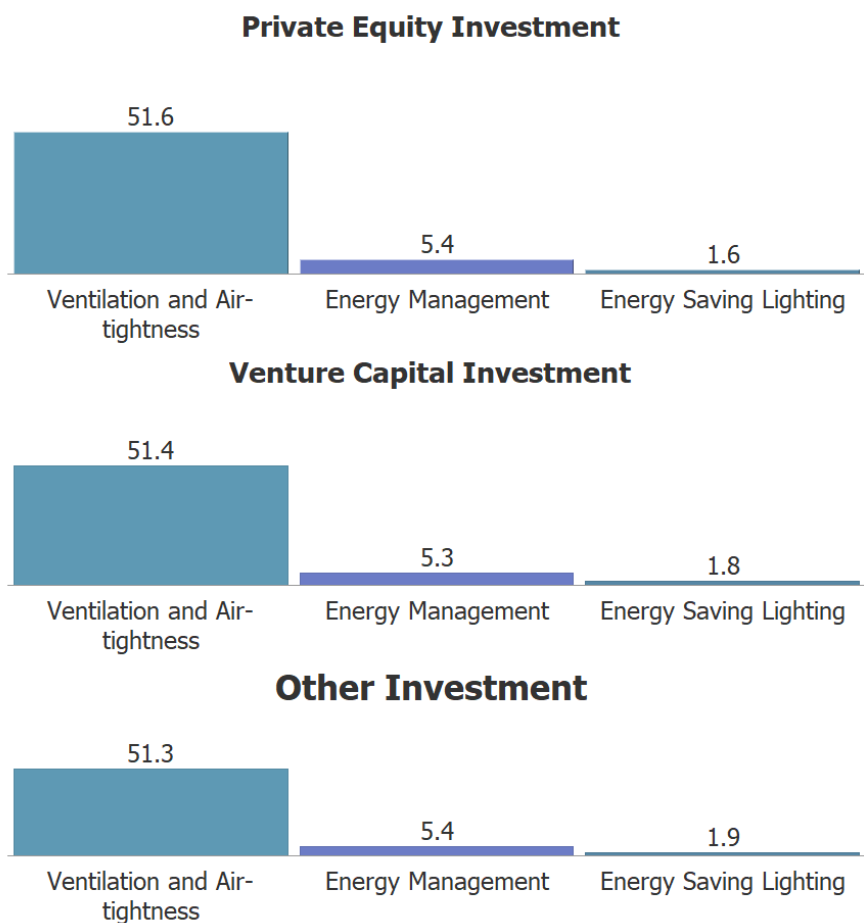


Figure 34 shows the investment in 2021/22 made into the Level 2 sub-sectors of Energy Efficiency Measures.

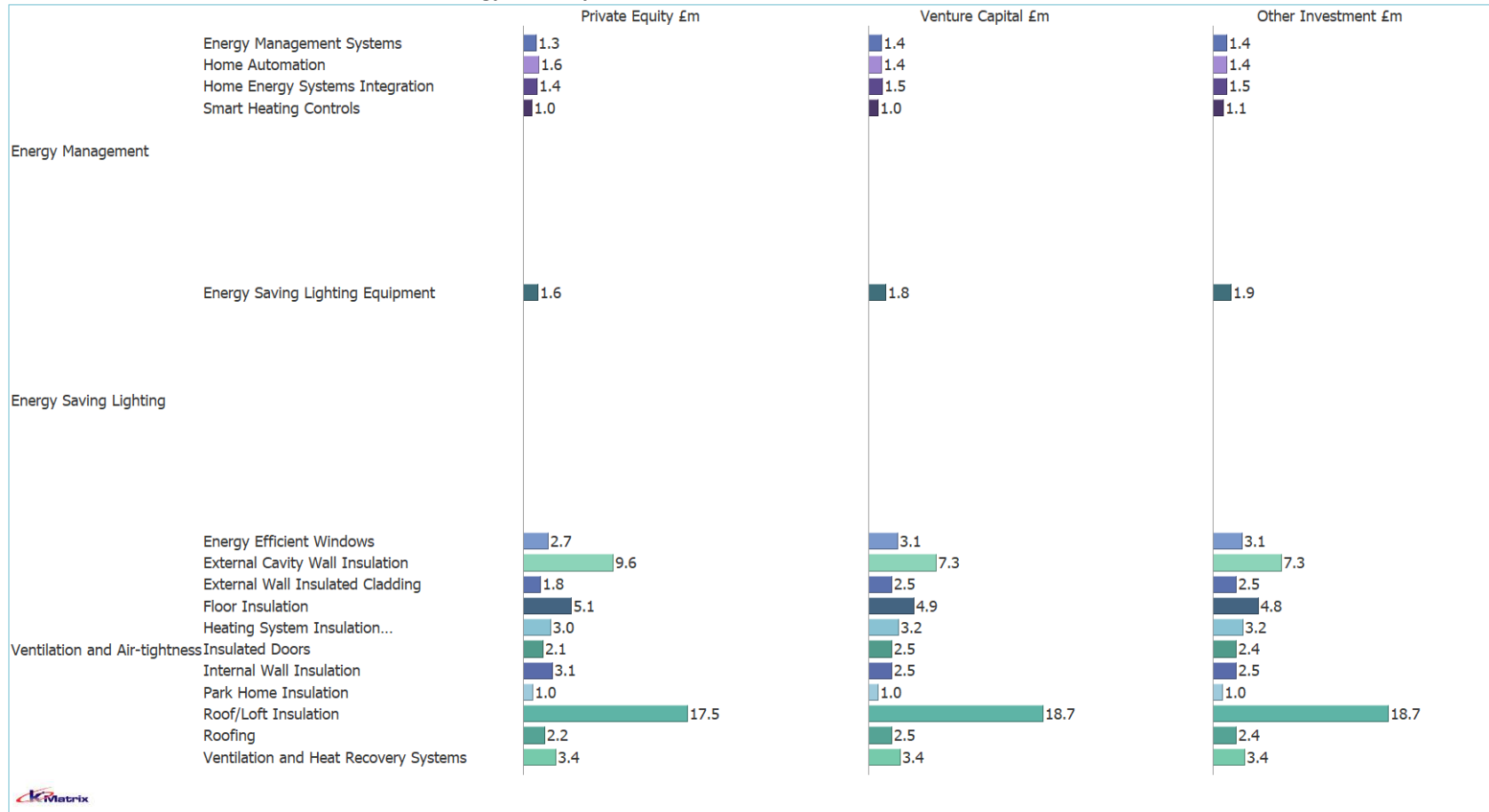
Investment for each of the three Energy Efficiency Measures sub-sectors grew between 2019/20 and 2021/22:

Ventilation & Air-tightness grew from £41.5m to £51.6m for Private Equity, from £44.8m to £51.4m for Venture Capital and grew from £42.5m to £51.3m for Other Investment

Energy Management grew from £4.5m to £5.4m for Private Equity, £4.2m to £5.3m for Venture Capital and £4.4m to £5.4m for Other Investment

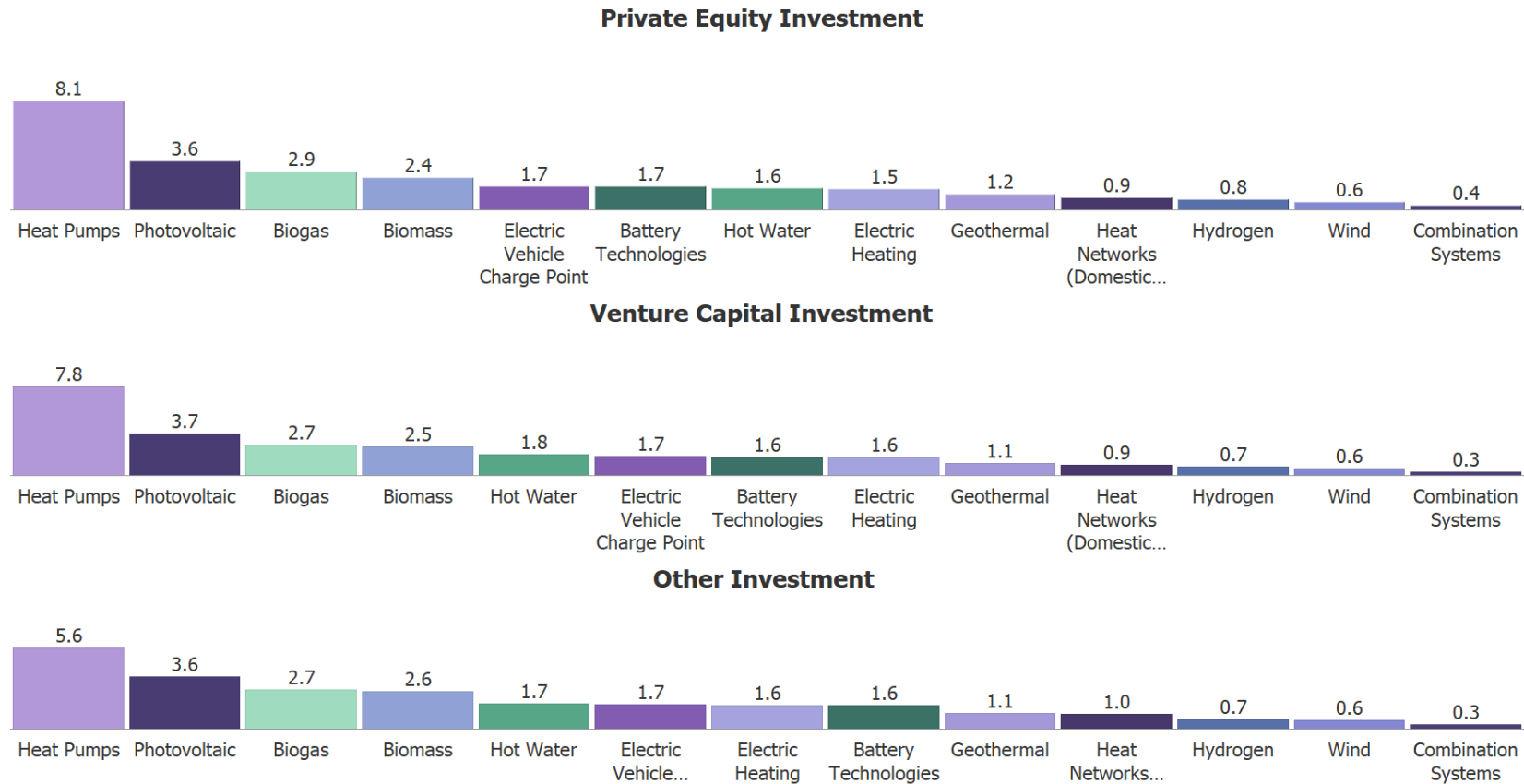
Energy Saving Lighting grew from £1.2m to £1.6m for Private Equity, £1.7m to £1.8m for Venture Capital and £1.3m to £1.9m for Other Investment

Figure 35: HertsLEP's DEESC Investment in R&D 2021/22 – Energy Efficiency Measures Level 3 sub-sectors



Investment for the Level 3 sub-sectors of within Energy Efficiency Measures have grown between 2019/20 and 2021/22. The pattern of investment for Private Equity, Venture Capital and Other Investment is similar to the Sales pattern in section 1.3.3.

Figure 36: HertsLEP's DEESC Investment in R&D 2021/22 – Level 2 Electricity and Heat



Investment for most of the top six Electricity and Heat sub-sectors grew between 2019/20 and 2021/22:

Heat Pumps grew from £6.7m to £8.1m for Private Equity, £6.2m to £7.8m for Venture Capital fell from £6.7m to £5.6m for Other Investment

Photovoltaic grew from £2.5m to £3.6m for Private Equity, from £2.7m to £3.7m for Venture Capital and from £3.0m to £3.6m for Other Investment

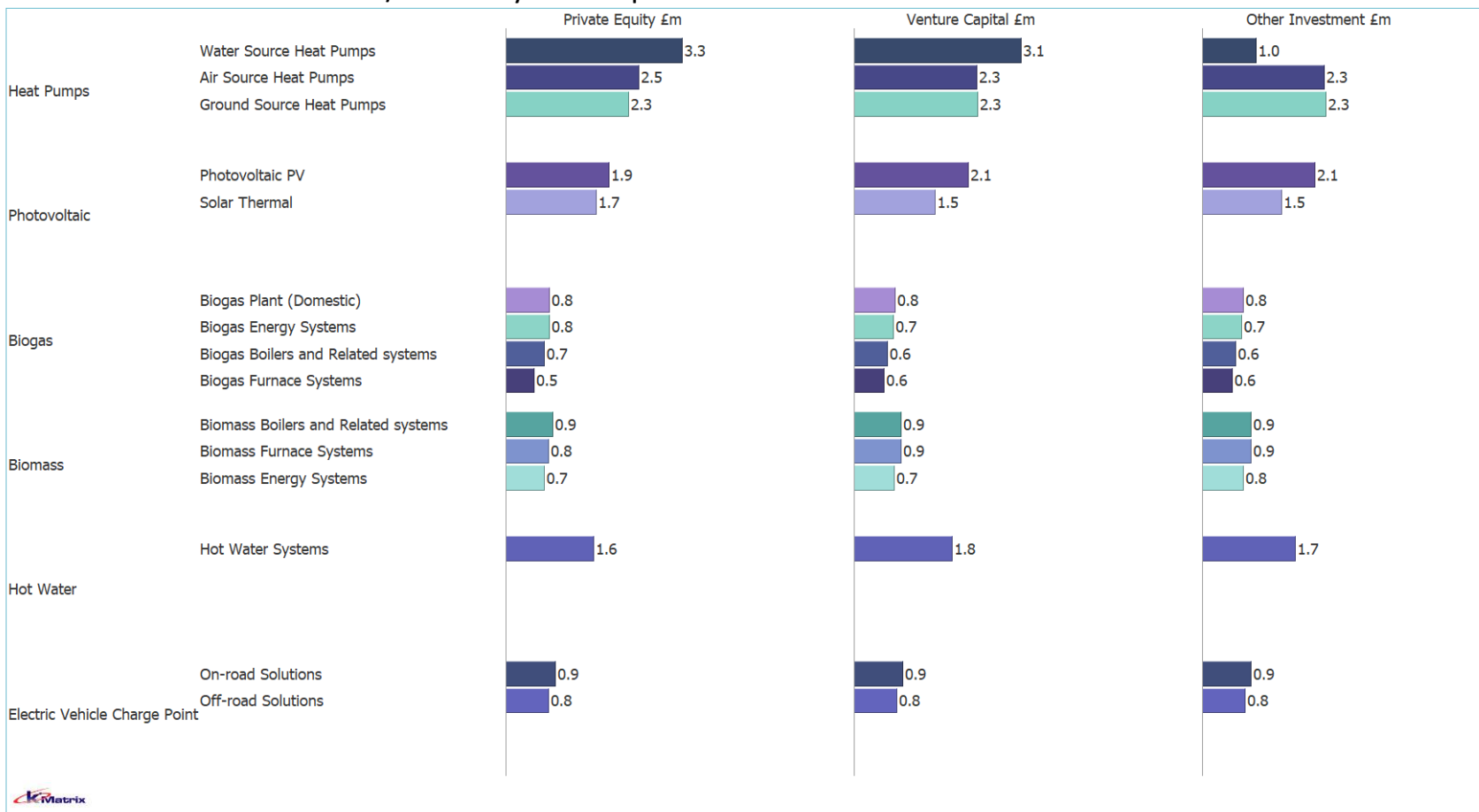
Biogas grew from £2.1m to £2.9m for Private Equity, from £2.2m to £2.7m for Venture Capital and from £2.4m to £2.7m for Other Investment

Biomass grew from £2.0m to £2.4m for Private Equity, £2.0m to £2.5m for Venture Capital and £2.0m to £2.6m for Other Investment

Hot Water grew from £1.5m to £1.6m for Private Equity, £1.3m to £1.6m for Venture Capital and £1.4m to £1.6m for Other Investment

Electric Vehicle Charge Points grew from £1.5m to £1.7m for Private Equity, £1.5m to £1.7m for Venture Capital and £1.4m to £1.7m for Other Investment

Figure 37: HertsLEP's DEESC Investment in R&D 2021/22 – Electricity and Heat top Level 3 sub-sectors



Investment for the Level 3 sub-sectors of the top Level 2 sub-sectors within Electricity and Heat have grown between 2019/20 and 2021/22. The pattern of investment for Private Equity, Venture Capital and Other Investment is similar to the Sales pattern in section 1.4.3. for most sub-sectors, with the exception of Heat Pumps, where Water Source Heat Pumps hold the smallest proportion of Sales, but significant Private Equity and Venture Capital investment, this is in line with the wider GSENZH and differs slightly to the UK average, where Venture Capital investment is slightly higher for Air Source Heat Pumps than Water Source. Ground Source Heat Pumps have the lowest Private Equity and Venture Capital of the three sub-sectors for the LEP, GSENZH and UK.

Figure 38: HertsLEP's DEESC Investment in R&D 2021/22 – Level 2 Making Good After Works

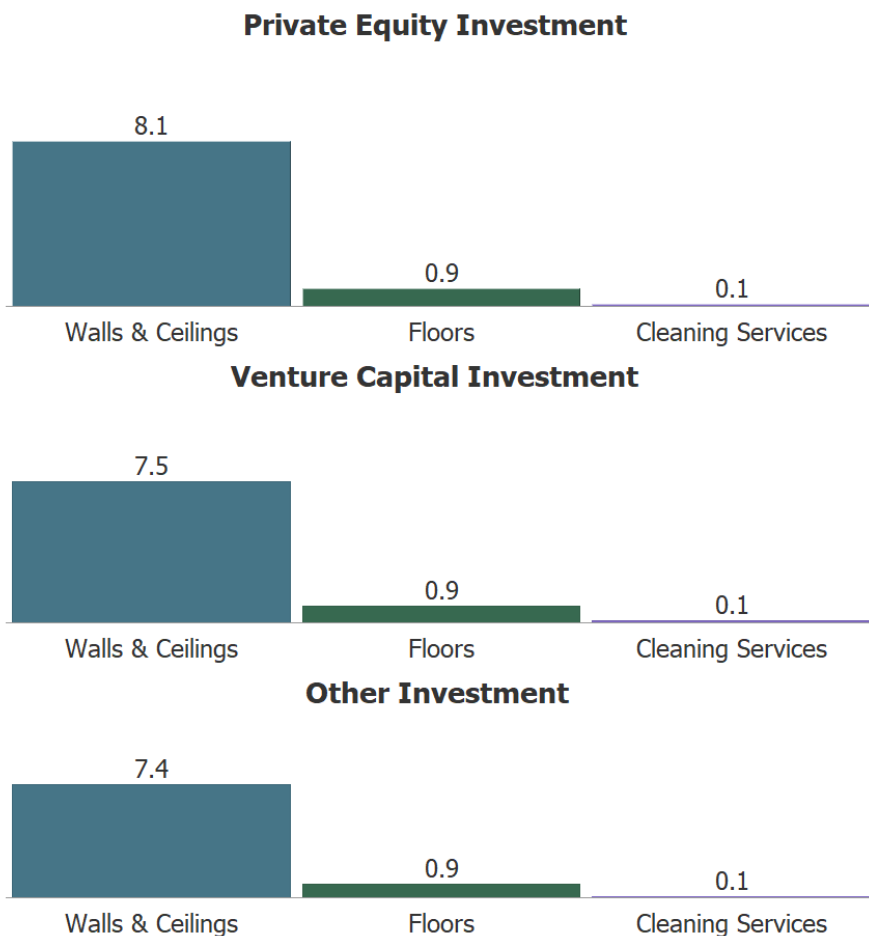


Figure 38 shows the investment in 2021/22 made into the Level 2 sub-sectors of Making Good After Works.

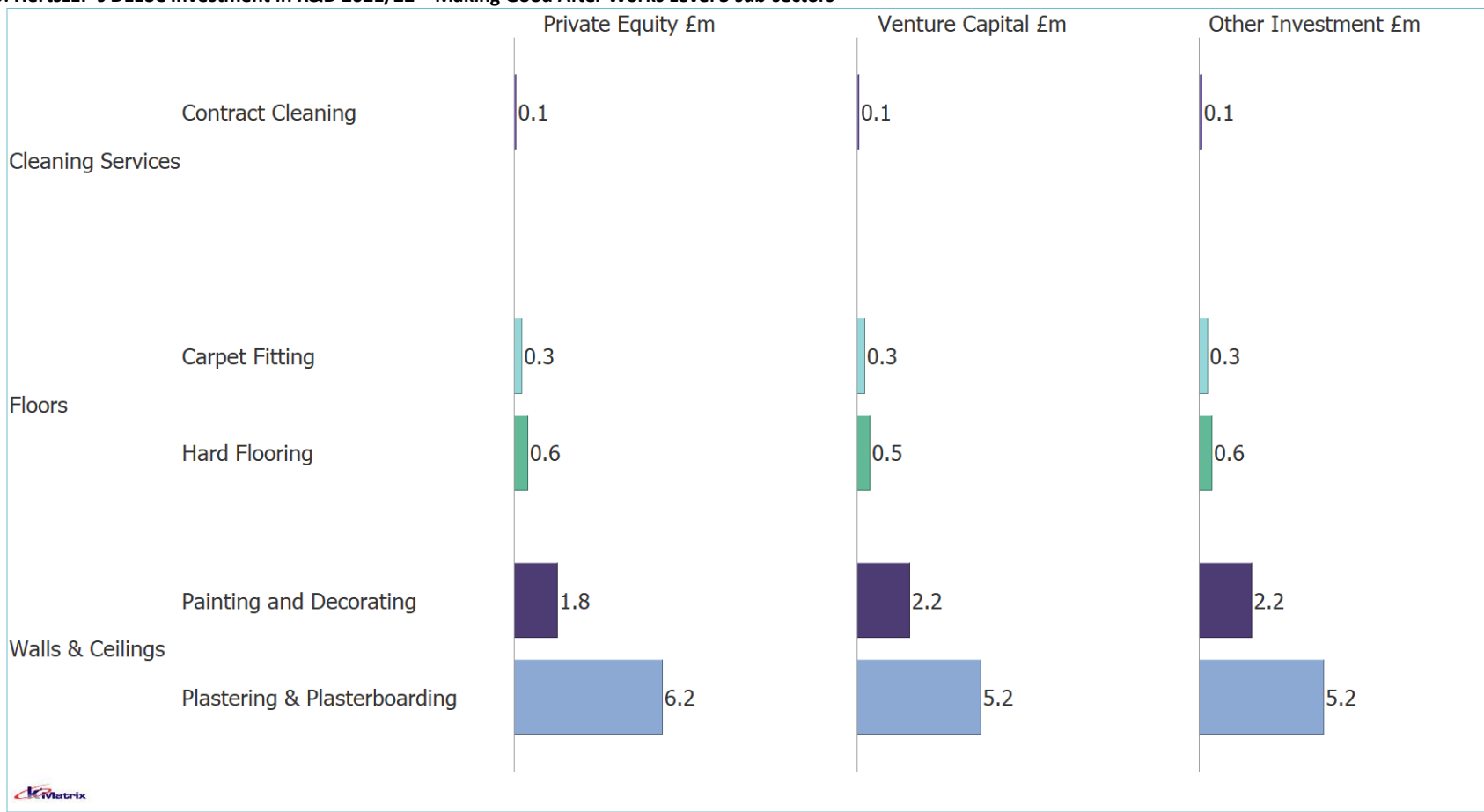
Investment for each of the three Making Good After Works sub-sectors grew between 2019/20 and 2020/21:

Walls & Ceilings from £6.5m to £8.1m for Private Equity, £5.8m to £7.5m for Venture Capital and £6.6m to £7.4m for Other Investment

Floors grew from £0.7m to £0.9m for Private Equity, £0.7m to £0.9m for Venture Capital and £0.7m to £0.9m for Other Investment

Contract Cleaning remained steady on £0.1m for Private Equity, grew from £0 to £0.1m for Venture Capital and remained steady on £0.1m for Other Investment

Figure 39: HertsLEP's DEESC Investment in R&D 2021/22 – Making Good After Works Level 3 sub-sectors



Investment for the Level 3 sub-sectors of the top Level 2 sub-sectors within Making Good After Works have grown between 2019/20 and 2021/22. The pattern of investment for Private Equity, Venture Capital and Other Investment is similar to the Sales pattern in section 1.5.3.

Figure 40: HertsLEP's DEESC Investment in R&D 2021/22 – Level 2 Advisory and Related Services

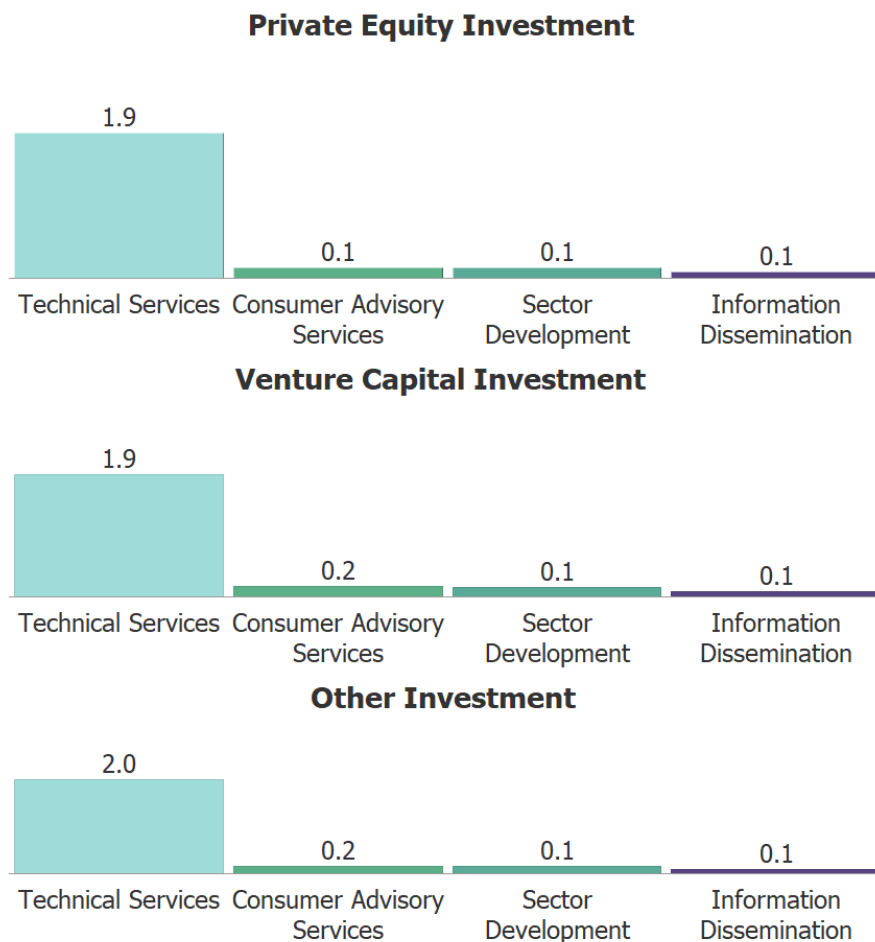


Figure 40 shows the investment in 2021/22 made into the Level 2 sub-sectors of Advisory and Related Services.

Investment for each of the four Advisory and Related Services sub-sectors grew or remained steady between 2019/20 and 2020/21:

Technical Services from £1.6m to £1.9m for Private Equity, £1.7m to £1.9m for Venture Capital and £1.6m to £2.0m for Other Investment

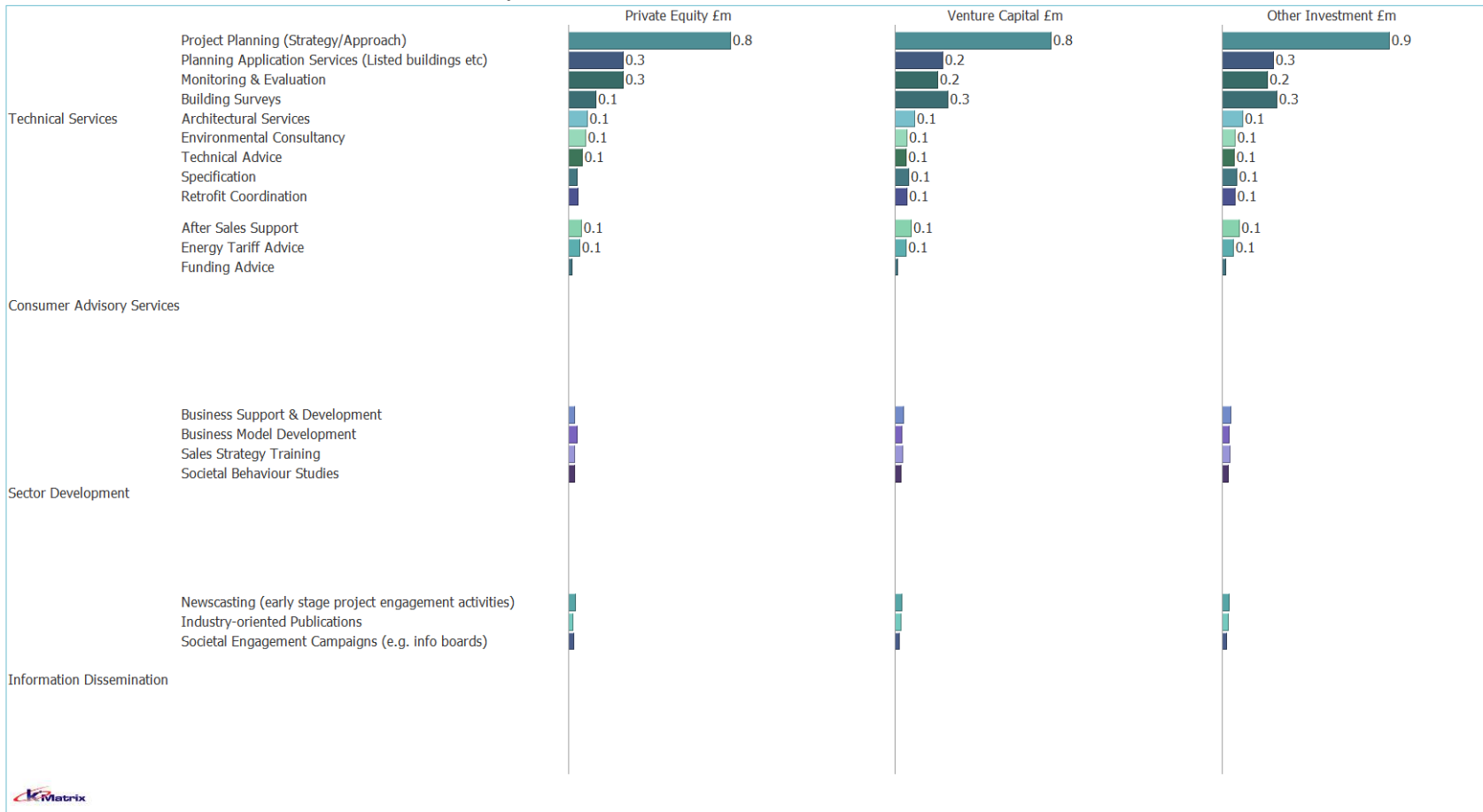
Sector Development remained steady at £0.1m for Private Equity, Venture Capital and Other Investment

Consumer Advisory Services was steady at £0.1m for Private Equity, grew from £0.1m to £0.2m for Venture Capital and from £0.1m to £0.2m for Other Investment

Information Dissemination remained steady at £0.1m for Private Equity, Venture Capital and Other Investment



Figure 41: HertsLEP’s DEESC Investment in R&D 2021/22 – Advisory and Related Services Level 3 sub-sectors



Investment for the Level 3 sub-sectors of the top Level 2 sub-sectors within Advisory and Related Services have grown between 2019/20 and 2021/22. The pattern of investment for Private Equity, Venture Capital and Other Investment is similar to the Sales pattern in section 1.6.3, with the exception of those sub-sectors with negligible investment.

1.9 HertsLEP’s DEESC Company Size and Employment

In this section we look at the number of companies within the HertsLEP in 2021/22, split by size of company, using the standard classification of company size. Company size classifications:

- Start-up = any company formed during the previous 12 months, for 2021/22 that would include companies formed during 2020/21
- Micro = companies with 1-9 employees
- SME = Small and Medium-sized companies, with 10-249 employees
- Large = companies with 250-1,500 employees
- Corporations = any company with 1,501 or more employees

Start-up companies are a discrete category, not dependent on number of employees and are not double counted in the other categories.

Figure 42: Companies 2021/22 split by size and Employment in 2021/22 split by Company Size

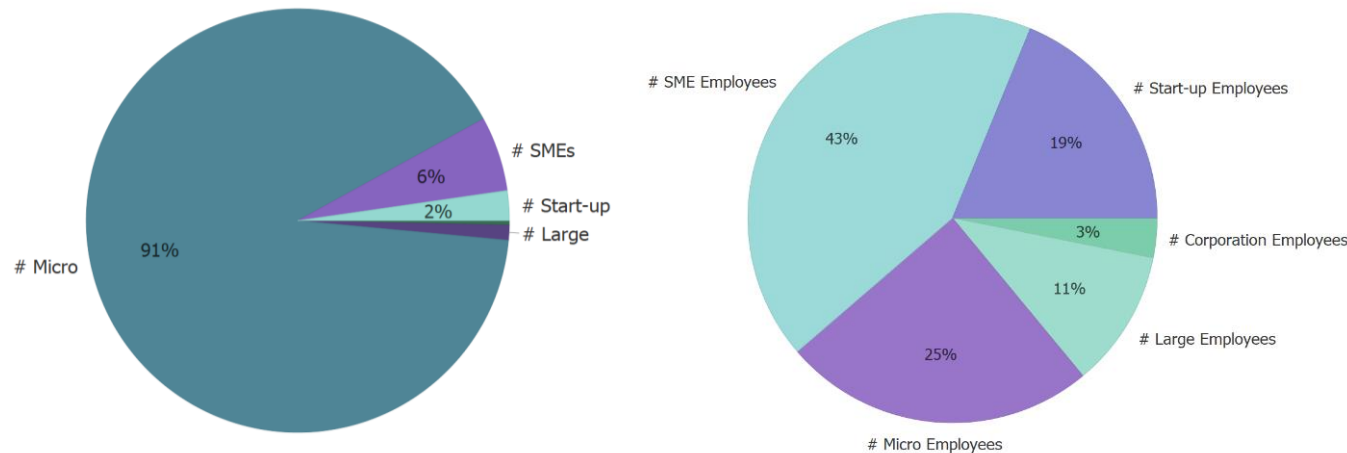
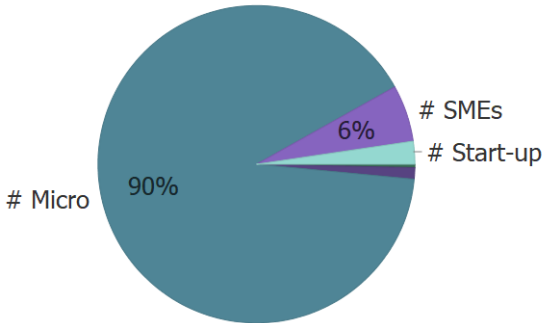


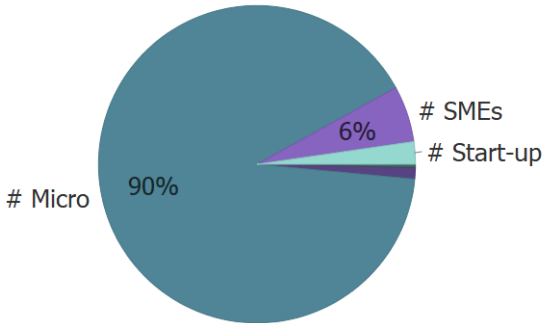
Figure 42 splits the 834 DEESC sector companies in 2021/22 by company size and employment by the size of company. The DEESC sector in the HertsLEP has a split within one percentage point of the GSENZH average and is characterized by:

- Micro: 91% of companies, but 25% of employment
- SME’s: 6% of companies, but 43% of employment
- Start-up, 2% of companies, but 19% of employment
- Large companies, 1% of companies, but 11% of employment
- Corporations, <1% of companies, but 3% of employment

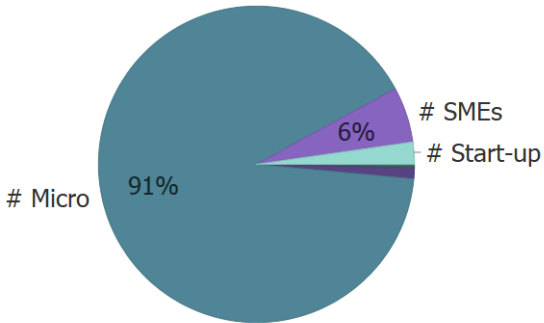
Figure 43: Companies 2021/22 split by size and Level 1
Advisory & Related Services



Electricity & Heat



Energy Efficiency Measures



Making Good After Works

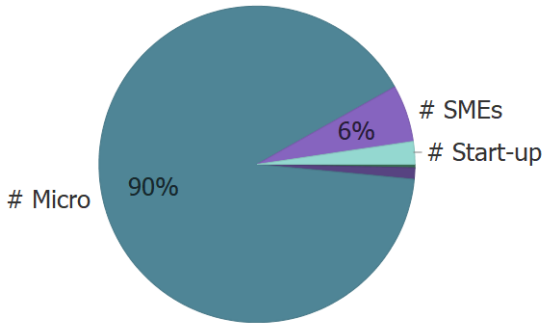
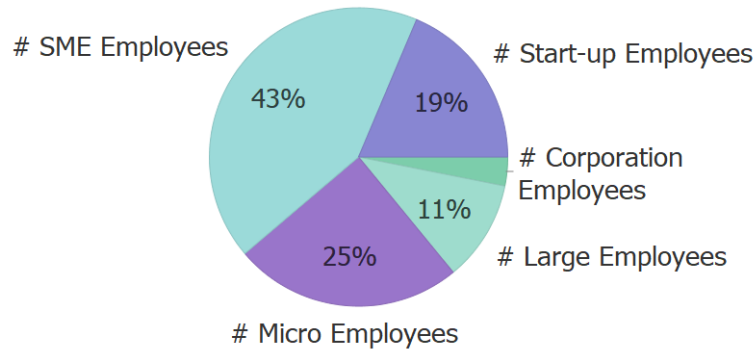


Figure 43 splits the DEESC companies in 2021/22 by company size and by Level 1. The DEESC sector in HertsLEP at Level 1 and Level 2 is relatively uniform, as would be expected with a market which is being serviced by an established sector. This split is within one percentage point of the GSENZH average.

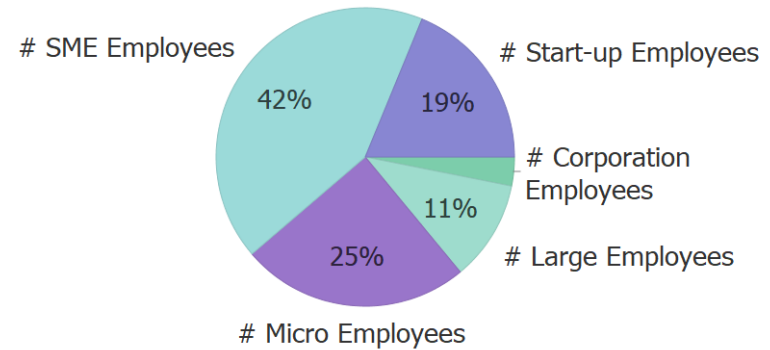


Figure 44: Employment 2021/22 split by Company Size and Level 1

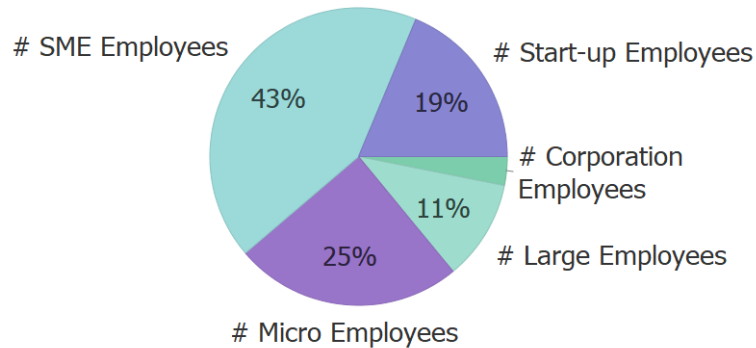
Advisory & Related Services



Electricity & Heat



Energy Efficiency Measures



Making Good After Works

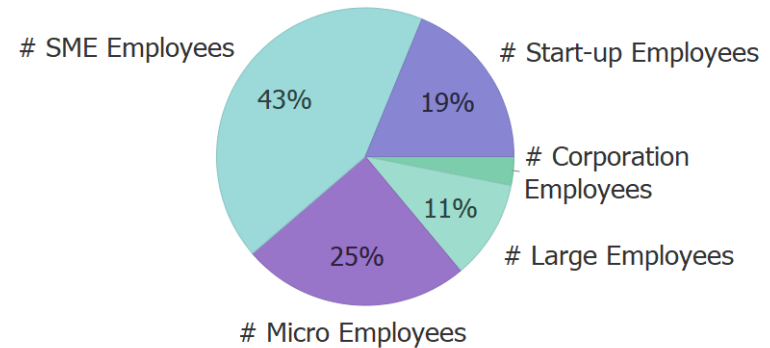


Figure 44 splits the DEESC employment in 2021/22 by company size and by Level 1. As for Figure 44, the DEESC sector in HertsLEP at Level 1 and Level 2 is relatively uniform, as would be expected with a market which is being serviced by an established sector. Proportions within the charts are within one percentage point of the GSENZH average.

1.10 HertsLEP's DEESC Historic Growth

In Section 1.1 annual growth in HertsLEP's DEESC sales, companies and employment was compared with growth in the GSENZH's DEESC sector as a whole for 2019/20 to 2021/22. Table 5 shows the HertsLEP's annual growth in more detail by breaking it down into sub-sectors for each of the three years. Growth between one year and the next is shown in red.

The HertsLEP covers 4.3% of the GSENZH total DEESC sector and 2.0% of the UK's total DEESC sector in terms of sales. The sector-level growth rates for the HertsLEP were within two percentage point of the GSENZH, and unlike the GSENZH were either slightly stronger or in line with the UK average for sales and employment 2019/20 and 2021/22. The number of companies showed more variation, with HertsLEP growth of 9.0% between 2019/20 and 2020/21, compared with the GSENZH of 6.1% and the UK 20.7%.

While annual growth in the DEESC sector as a whole has varied between 8.4% and 12.5% for each of the three parameters, Table 5 shows that the sector has experienced varied growth in terms of sales across the Level 2 sub-sectors.

The HertsLEP has grown slightly stronger than the UK average, and is also above the UK average for some Level 2 sub-sectors between 2019/20 and 2021/22, which are a reflection of the opportunities that are being created by drivers of growth including policy, regulation and consumer choices, these include:

Battery Technologies, where the HertsLEP growth rates were 11.9% between 2019/20 and 2020/21 and 8.9% between 2020/21 and 2021/22 and the UK growth rates were 8.8% between 2019/20 and 2020/21 and 10.3% between 2020/21 and 2021/22

Biomass, where the HertsLEP growth rates were 10.7% between 2019/20 and 2020/21 and 10.5% between 2020/21 and 2021/22 and the UK growth rates were 10.4% between 2019/20 and 2020/21 and 10.6% between 2020/21 and 2021/22

Heat Pumps, where the HertsLEP growth rates were -5.2% between 2019/20 and 2020/21 and 28.8% between 2020/21 and 2021/22 and the UK growth rates were -2.7% between 2019/20 and 2020/21 and 24.9% between 2020/21 and 2021/22

Wind, where the HertsLEP growth rates were 10.9% between 2019/20 and 2020/21 and 10.8% between 2020/21 and 2021/22 and the UK growth rates were 6.7% between 2019/20 and 2020/21 and 10.7% between 2020/21 and 2021/22

Ventilation & Air-tightness, where the HertsLEP growth rates were 11.9% between 2019/20 and 2020/21 and 9.1% between 2020/21 and 2021/22 and the UK growth rates were 11.1% between 2019/20 and 2020/21 and 9.2% between 2020/21 and 2021/22

Walls & Ceilings, where the HertsLEP growth rates were 12.9% between 2019/20 and 2020/21 and 7.8% between 2020/21 and 2021/22 and the UK growth rates were 8.5% between 2019/20 and 2020/21 and 9.3% between 2020/21 and 2021/22

Table 5: HertsLEP’s DEESC Sales (£m), Company and Employment Growth 2019/20 to 2021/22

Level 1	Level 2	Turnover/ Sales £m					# Employees					# Companies				
		2019/20	Growth	2020/21	Growth	2021/22	2019/20	Growth	2020/21	Growth	2021/22	2019/20	Growth	2020/21	Growth	2021/22
Advisory & Rel. Ser.	Consumer Advisory Services	1.5	12.7%	1.7	9.5%	1.9	14.2	12.6%	16.0	10.1%	17.6	0.4	26.3%	0.6	11.4%	0.6
Advisory & Rel. Ser.	Information Dissemination	0.9	10.3%	1.0	9.4%	1.0	8.8	9.6%	9.6	9.4%	10.5	0.3	14.2%	0.3	10.8%	0.3
Advisory & Rel. Ser.	Sector Development	1.5	11.3%	1.7	10.5%	1.9	14.5	12.8%	16.4	8.9%	17.8	0.4	9.0%	0.4	9.4%	0.5
Advisory & Rel. Ser.	Technical Services	20.9	11.1%	23.3	10.4%	25.7	192.9	11.8%	215.7	9.9%	237.1	5.6	9.8%	6.1	10.0%	6.7
Electricity & Heat	Battery Technologies	17.3	9.4%	19.0	11.2%	21.1	171.2	8.9%	186.5	11.4%	207.7	5.2	16.2%	6.1	11.1%	6.8
Electricity & Heat	Biogas	28.7	11.8%	32.1	8.9%	35.0	282.4	11.9%	316.1	8.6%	343.3	7.2	2.3%	7.4	8.9%	8.0
Electricity & Heat	Biomass	26.3	10.7%	29.1	10.5%	32.2	248.9	10.6%	275.4	10.2%	303.6	8.4	-3.4%	8.2	10.2%	9.0
Electricity & Heat	Combination Systems	3.3	12.7%	3.7	7.7%	4.0	31.9	11.8%	35.7	8.8%	38.8	0.9	16.7%	1.1	8.8%	1.2
Electricity & Heat	Electric Heating	16.2	11.8%	18.1	9.2%	19.8	156.9	12.2%	176.1	9.3%	192.5	4.0	18.3%	4.8	7.8%	5.1
Electricity & Heat	Electric Vehicle Charge Point	17.7	12.2%	19.9	9.2%	21.7	173.9	12.3%	195.2	9.1%	213.1	4.4	15.2%	5.1	9.4%	5.6
Electricity & Heat	Geothermal	11.4	10.4%	12.6	10.5%	13.9	113.3	11.0%	125.8	9.7%	137.9	3.4	20.0%	4.1	10.2%	4.5
Electricity & Heat	Heat Networks	10.8	9.7%	11.8	11.3%	13.2	101.0	9.9%	111.0	11.6%	124.0	3.4	4.5%	3.6	10.7%	4.0
Electricity & Heat	Heat Pumps	56.0	-5.2%	53.1	28.8%	68.4	773.4	-24.7%	582.6	61.8%	942.5	16.3	2.2%	16.7	28.8%	21.5
Electricity & Heat	Hot Water	18.8	10.9%	20.9	9.3%	22.8	193.4	10.6%	213.8	10.0%	235.2	5.5	3.7%	5.7	10.6%	6.3
Electricity & Heat	Hydrogen	7.4	10.3%	8.2	10.9%	9.1	77.7	10.0%	85.4	11.4%	95.2	2.1	4.7%	2.2	10.5%	2.4
Electricity & Heat	Photovoltaic	35.9	10.2%	39.6	10.0%	43.5	358.1	10.6%	396.0	9.3%	432.9	9.8	7.7%	10.5	11.0%	11.7
Electricity & Heat	Wind	6.5	10.1%	7.1	10.8%	7.9	62.4	10.8%	69.1	10.3%	76.3	1.9	12.5%	2.2	11.5%	2.4
Energy Efficiency Meas.	Energy Management	55.7	11.2%	61.9	9.2%	67.6	548.7	11.5%	611.7	8.9%	665.9	16.4	-11.4%	14.5	9.3%	15.9
Energy Efficiency Meas.	Energy Saving Lighting	19.4	11.0%	21.6	10.3%	23.8	181.9	9.0%	198.3	11.8%	221.6	5.6	1.5%	5.7	12.1%	6.4
Energy Efficiency Meas.	Ventilation and Air-tightness	545.0	11.9%	610.0	9.1%	665.7	5,343.4	11.0%	5,932.7	10.0%	6,526.9	150.6	10.6%	166.5	10.6%	184.1
Making Good After Works	Cleaning Services	0.9	9.9%	0.9	10.5%	1.0	24.9	9.3%	27.2	11.5%	30.3	0.6	17.9%	0.7	11.9%	0.8
Making Good After Works	Floors	9.2	10.1%	10.1	10.5%	11.2	87.2	9.8%	95.7	11.1%	106.3	2.5	4.5%	2.7	11.3%	3.0
Making Good After Works	Walls & Ceilings	77.7	12.9%	87.7	7.8%	94.5	792.5	12.9%	894.9	7.1%	958.5	24.2	21.8%	29.5	6.4%	31.4
Total		989.2	10.7%	1,095.1	10.2%	1,206.9	9,953	8.4%	10,787	12.5%	12,135	279	9.0%	304	11.0%	338

Some sub-sectors have shown stronger growth across the 3-year study period 2019/20 to 2021/22 than the UK average and should be considered strengths of the region and include:

Battery Technologies with 21.6% (GSENZH 22.2%, UK 19.9%)

Biomass with 22.3% (GSENZH 22.0%, UK 21.2%)

Combination Systems with 21.3% (GSENZH 21.7%, UK 20.5%)

Heat Pumps with 22.1% (GSENZH 22.1%, UK 21.5%)

Wind with 22.0% (GSENZH 21.3%, UK 18.1%)

Ventilation & Air-tightness with 22.0% (GSENZH 21.9%, UK 21.3%)

Walls & Ceilings with 21.6% (GSENZH 21.9%, UK 18.5%)

Some sub-sectors have shown weaker growth across the 3-year study period 2019/20 to 2021/22 than the UK average and include:

Sector Development with 23.0% (GSENZH 21.6%, UK 24.7%)

Electric Heating with 22.1% (GSENZH 22.2%, UK 24.1%)

Geothermal with 21.9% (GSENZH 22.3%, UK 24.1%)

Heat Networks with 22.1% (GSENZH 21.7%, UK 24.8%)

Hot Water with 21.2% (GSENZH 22.7%, UK 24.6%)

Photovoltaic with 21.1% (GSENZH 22.2%, UK 23.8%)

Energy Saving Lighting with 22.4% (GSENZH 22.4%, UK 27.1%)

Cleaning Services with 21.5% (GSENZH 22.2%, UK 24.2%)

Floors with 21.6% (GSENZH 21.9%, UK 24.8%)

By overlaying the sales for each sub-sector as a proportion of the UK market, the impact of stronger or weaker sales growth can be examined more closely.

Table 6 shows how the HertsLEP compares with the wider GSENZH and the UK as a whole for the 23 Level 2 sub-sectors.

The HertsLEP as a % of GSENZH Sales and as a % of UK Sales have been converted to Proportionality Factors, where 1.0 equals the sector value, below 1.0 represents a smaller market than the sector total proportion and above 1.0 represents a market which is larger than the sector total proportion.

Likewise, the LEP/GSENZ and LEP/UK Growth Factors indicates where growth is stronger than the GSENZH or UK (above 1.0) or weaker than the GSENZH or UK (below 1.0)

Table 6: UK, GSENZH and HertsLEP DEESC Sales (£m) and 3-Year Growth Comparison

Level 1	Level 2	UK		GSENZH			LEP							
		UK Sales £m 2021/22	UK 3-Year Growth %	GSENZH Sales £m 2021/22	GSENZH 3-Year Growth %	GSENZH as % of UK	LEP Sales £m 2021/22	LEP 3-Year Growth %	LEP as % of UK	LEP/UK Sales Proportionality Factor	LEP/UK Growth Factor	LEP as % of GSENZH	LEP/GSENZH Sales Proportionality Factor	LEP/GSENZH Growth Factor
Advisory & Rel. Ser.	Consumer Advisory Services	109.0	22.8%	43.1	21.7%	39.5%	1.9	23.3%	1.7%	0.9	1.0	4.4%	1.0	1.1
Advisory & Rel. Ser.	Information Dissemination	59.5	21.2%	24.2	21.6%	40.8%	1.0	20.7%	1.8%	0.9	1.0	4.3%	1.0	1.0
Advisory & Rel. Ser.	Sector Development	102.0	24.7%	43.2	21.6%	42.3%	1.9	23.0%	1.8%	0.9	0.9	4.3%	1.0	1.1
Advisory & Rel. Ser.	Technical Services	1,480.9	22.8%	565.3	22.3%	38.2%	25.7	22.7%	1.7%	0.9	1.0	4.5%	1.0	1.0
Electricity & Heat	Battery Technologies	866.8	19.9%	466.6	22.2%	53.8%	21.1	21.6%	2.4%	1.2	1.1	4.5%	1.0	1.0
Electricity & Heat	Biogas	1,798.5	22.6%	786.7	21.7%	43.7%	35.0	21.8%	1.9%	1.0	1.0	4.4%	1.0	1.0
Electricity & Heat	Biomass	1,285.5	21.2%	749.5	22.0%	58.3%	32.2	22.3%	2.5%	1.2	1.1	4.3%	1.0	1.0
Electricity & Heat	Combination Systems	195.2	20.5%	94.2	21.7%	48.2%	4.0	21.3%	2.1%	1.0	1.0	4.3%	1.0	1.0
Electricity & Heat	Electric Heating	865.5	24.1%	450.6	22.2%	52.1%	19.8	22.1%	2.3%	1.1	0.9	4.4%	1.0	1.0
Electricity & Heat	Electric Vehicle Charge Point	1,128.6	23.3%	525.4	21.9%	46.6%	21.7	22.6%	1.9%	1.0	1.0	4.1%	1.0	1.0
Electricity & Heat	Geothermal	809.5	24.1%	338.2	22.3%	41.8%	13.9	21.9%	1.7%	0.9	0.9	4.1%	0.9	1.0
Electricity & Heat	Heat Networks	493.4	24.8%	291.5	21.7%	59.1%	13.2	22.1%	2.7%	1.3	0.9	4.5%	1.0	1.0
Electricity & Heat	Heat Pumps	3,162.3	21.5%	1,653.5	22.1%	52.3%	68.4	22.1%	2.2%	1.1	1.0	4.1%	1.0	1.0
Electricity & Heat	Hot Water	893.2	24.6%	542.7	22.7%	60.8%	22.8	21.2%	2.6%	1.3	0.9	4.2%	1.0	0.9
Electricity & Heat	Hydrogen	387.7	22.5%	233.2	21.7%	60.1%	9.1	22.3%	2.3%	1.2	1.0	3.9%	0.9	1.0
Electricity & Heat	Photovoltaic	2,098.2	23.8%	1,008.9	22.2%	48.1%	43.5	21.1%	2.1%	1.0	0.9	4.3%	1.0	1.0
Electricity & Heat	Wind	336.6	18.1%	185.1	21.3%	55.0%	7.9	22.0%	2.3%	1.2	1.2	4.3%	1.0	1.0
Energy Efficiency Meas.	Energy Management	2,977.2	23.4%	1,525.0	22.2%	51.2%	67.6	21.4%	2.3%	1.1	0.9	4.4%	1.0	1.0
Energy Efficiency Meas.	Energy Saving Lighting	1,076.9	27.1%	524.9	22.4%	48.7%	23.8	22.4%	2.2%	1.1	0.8	4.5%	1.0	1.0
Energy Efficiency Meas.	Ventilation and Air-tightness	33,681.7	21.3%	15,254.6	21.9%	45.3%	665.7	22.2%	2.0%	1.0	1.0	4.4%	1.0	1.0
Making Good After Works	Cleaning Services	42.7	24.2%	20.9	22.2%	48.8%	1.0	21.5%	2.4%	1.2	0.9	4.9%	1.1	1.0
Making Good After Works	Floors	622.9	24.8%	244.9	21.9%	39.3%	11.2	21.6%	1.8%	0.9	0.9	4.6%	1.1	1.0
Making Good After Works	Walls & Ceilings	5,421.0	18.5%	2,211.3	21.9%	40.8%	94.5	21.6%	1.7%	0.9	1.2	4.3%	1.0	1.0
Total		59,894.8	21.6%	27,783.3	22.0%	46.4%	1,206.9	22.0%	2.0%			4.3%		

Figure 45 shows how the HertsLEP compares with the UK for the 23 Level 2 sub-sectors, with regards to size of market and growth across the three-year study period 2019/20 to 2021/22.

The x-axis represents the LEP/UK sales proportionality factor, which was calculated for each sub-sector by dividing the HertsLEP sales a percentage of the UK, by 2.0%. This proportionality factor demonstrates where the HertsLEP holds a larger or smaller share of the UK market than would be expected, where:

- 1 = 2.0% of the UK market
- >1 = larger than 2.0% share
- <1 = smaller than 2.0% share

The y-axis represents the growth rate of the HertsLEP's Level 2 sub-sectors compared with the UK. This was calculated by dividing the 3-year growth rate of the LEP by the average UK growth rate. This growth rate factor demonstrates which sub-sectors have a stronger or slower growth rate than the UK, where:

- 1 = the UK growth rate
- >1 = stronger than the UK average growth
- <1 = weaker than UK growth

The graph is split into four quadrants along one on each axis, with sub-sectors in each demonstrating:

- Top right = larger market share than expected and stronger growth than the UK average
- Bottom Right = larger market share than expected, but weaker growth than the UK average
- Top left = smaller market share than expected, but stronger growth than the UK average
- Bottom left = smaller market share than expected and weaker growth than the UK average

The bubbles represent the 23 Level 2 sub-sectors and are sized by the HertsLEP 2021/22 sales £m, illustrating the relative sizes of each sub-sector.

Figure 45: HertsLEP/UK Sales proportionality factor vs. HertsLEP/UK Growth factor of Level 2 Sub-sectors – Bubbles Sized by Sales £m

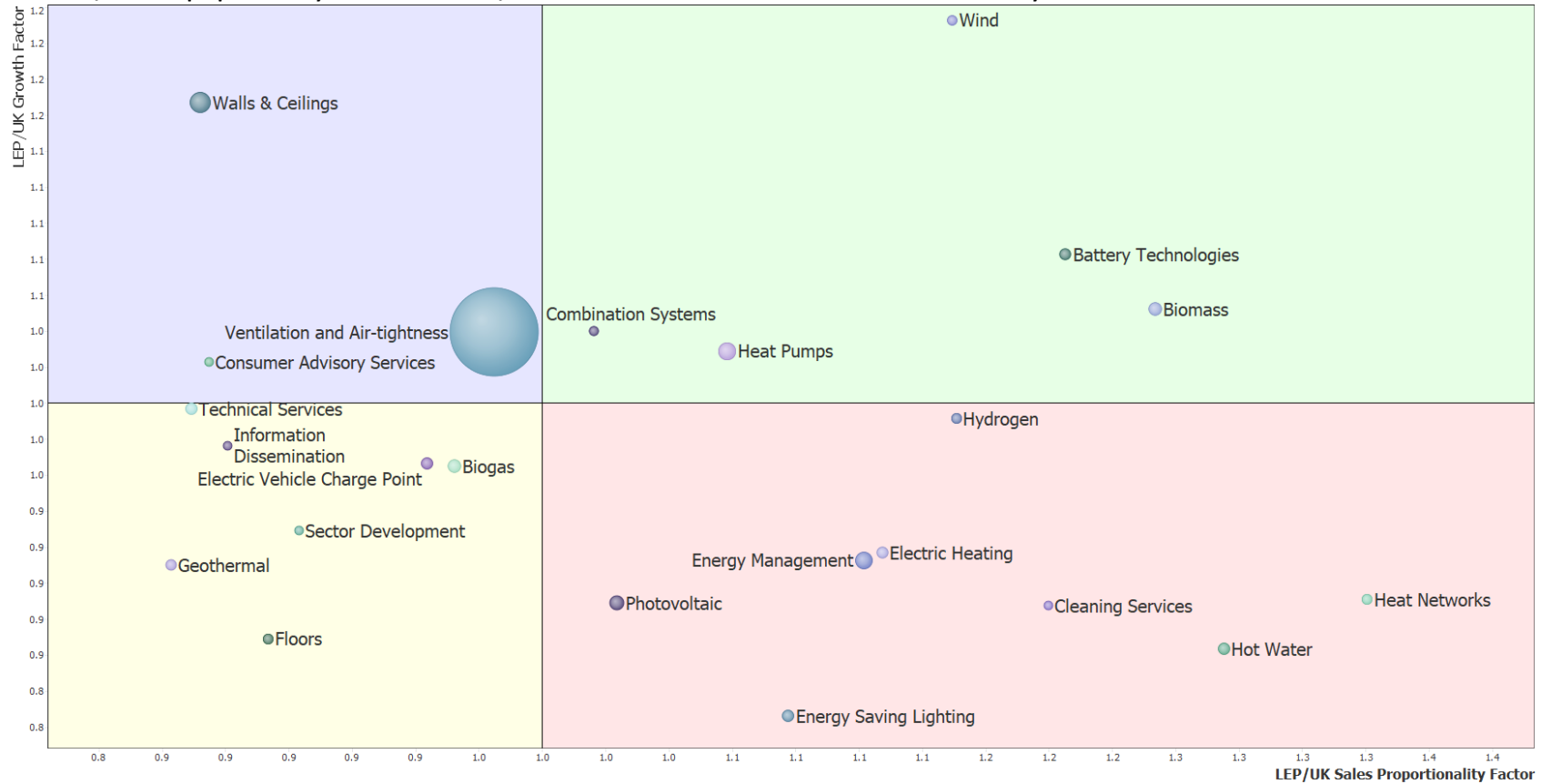


Figure 45 clearly illustrates the strong growth of many of the Level 2 sub-sectors within Electricity and Heat, including Wind, Battery Technologies and Biomass which combine stronger growth than the UK average and larger proportion of the UK market than would be expected. Hot Water, Heat Networks, Cleaning Services, Electric Heating, Energy Management and Energy Saving Lighting hold a larger share of the market than would be expected, but experienced slower growth than the UK average. Heat Pumps and Hydrogen experienced similar growth than the UK average but hold a larger proportion of the UK market than would be expected. Walls & Ceilings hold a smaller market share but saw stronger growth than the UK average and sub-sectors with slower growth and a smaller proportion of the market include Floors, Sector Development and Geothermal.

1.11 HertsLEP's DEESC Sector Scalability

In this section we explain the concept of scalability, what influences it, how it can be combined with GVA to explore opportunities and finally why it is different to using only growth. Scalability refers to the combination of:

- Existence of appropriate available market
- The scalability of technology within a company, area or market
- Affordability of technology
- Availability of appropriate skill sets in the locality
- Historic growth
- Accessibility of networks and chains of supply

All of these factors are taken into consideration when grading scalability.

The scalability of the sector has been calculated by attributing a scalability factor of 'Low,' 'Medium' or 'High' per product or service at the Local Authority level, which has been given the corresponding value of 1 = Low; 2 = Medium and 3 = High. We have then taken the average of those values for the products and services grouped together for the Levels to produce an index of scalability. For example, there are twenty-one products and services within the Level 2 sub-sector of Heat Pumps, within Electricity and Heat. For each Local Authority (using Westminster as an example), each product and service was allocated a scalability factor:

- 9 products and services listed as 'High' with a score of 3
- 12 products and services listed as 'Medium' with a score of 2
- 0 products and services listed a 'Low' with a score of 1

Calculation:

$$\frac{(9 \times 3) + (12 \times 2) + (0 \times 1)}{21} = 2.43$$

The scalability index has been calculated for the 340 products and services, for the Activity Codes of Level 3 of the dataset, for each Local Authority, with the average being used to plot the potential for scalability against the GVA of the sector at Level 2.

Figure 46: HertsLEP's Scalability vs. GVA of Level 2 Sub-sectors 2021/22 – Bubbles Sized by GVA

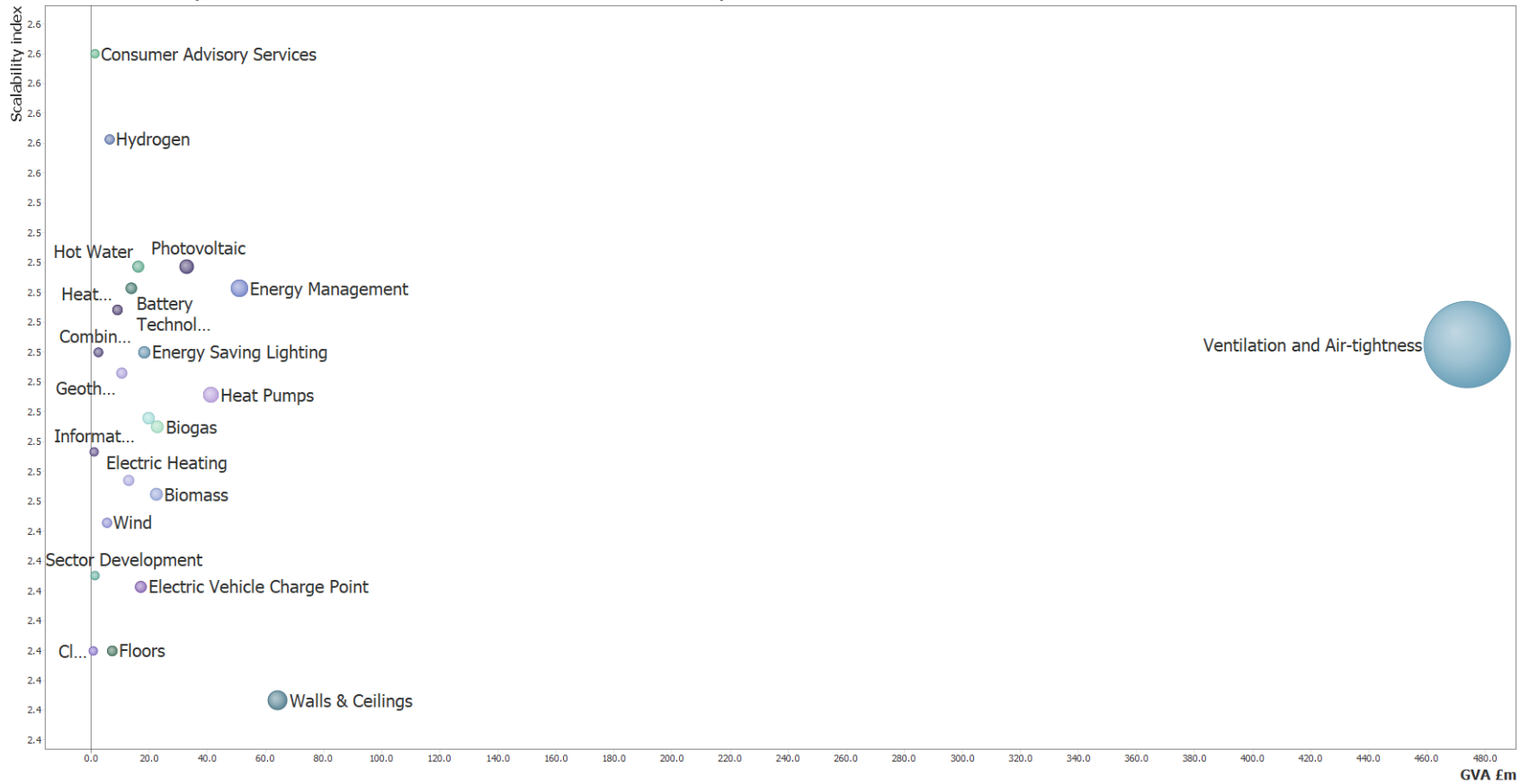


Figure 46 shows the GVA plotted against the scalability index of the 23 Level 2 sub-sectors for the GSENZH, with each bubble sized by the GVA of that sub-sector in 2021/22. The most desirable position would be the top right-hand corner of the graph, with high GVA and high Scalability. We can see that the Ventilation & Air-tightness dominates the graph, with medium scalability and very high GVA compared with the other sub-sectors.

Figure 47 removes Ventilation & Air-tightness to enable the scalability of other sub-sectors to become more clear.

Figure 47: HertsLEP's Scalability vs. GVA of Level 2 Sub-sectors 2021/22 – Bubbles Sized by GVA – Ventilation & Air-tightness removed

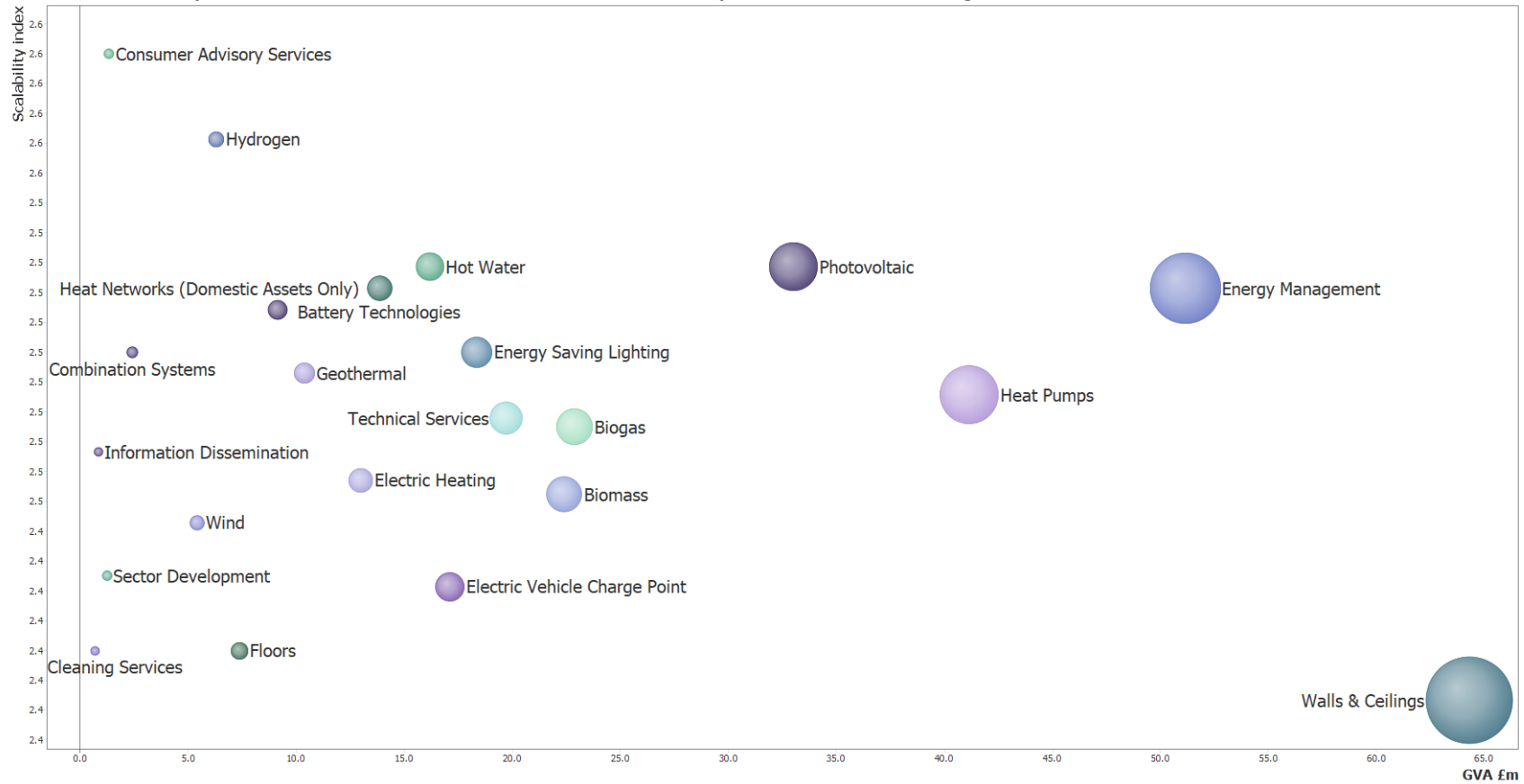


Figure 47 shows the same data as Figure 46, with Ventilation & Air-tightness removed. Walls & Ceilings are large in size, but the lowest in terms of scalability and is in a worse position than the GSENZH average. Conversely, Consumer Advisory Services is the highest in terms of scalability, while it is average scalability across the region. The most scalable sub-sector in the GSENZH is Information Dissemination, while in the HertsLEP this sub-sector is average. Sub-sectors that are more scalable relative to the other sub-sectors in the HertsLEP than the regional average include Hydrogen, Geothermal and Heat Networks.

Figure 48: HertsLEP's 2020/21 Growth Rates vs. GVA of Level 2 Sub-sectors – Bubbles Sized by GVA

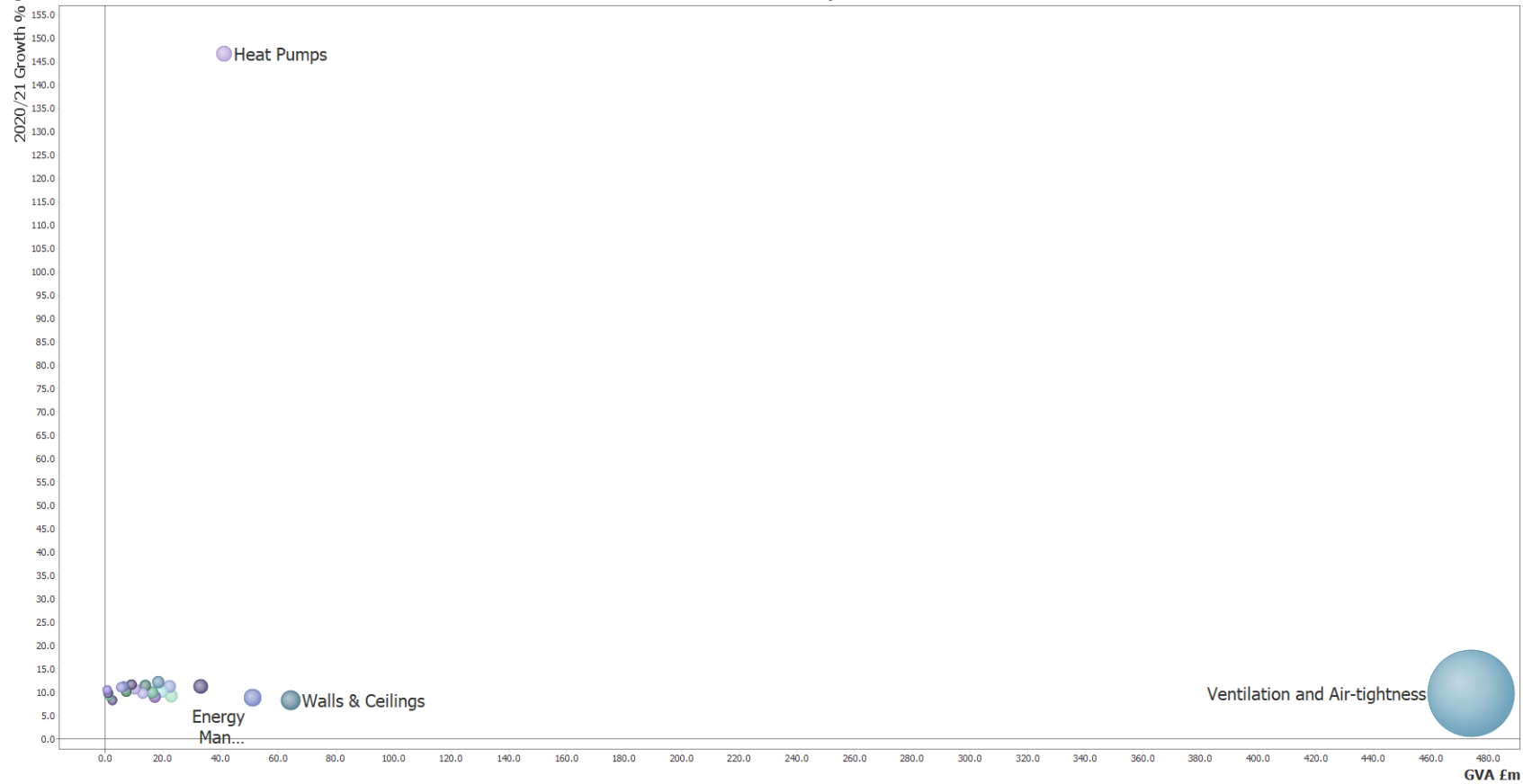


Figure 48 shows the same principle as Figures 46 and 47, but with GVA plotted against the growth rates of the Level 2 sub-sectors for 2020/21. This figure illustrates a different pattern of opportunity to the use of the scalability index. When only viewing growth, we can see that the Heat Pumps sub-sector dominates the graph in terms of growth, but in terms of scalability (Figure 47), other factors which can form barriers to scalability, such as restrictions in the supply chain or network of supply or the availability of skills etc. In terms of Heat Pumps, scalability is currently impacted by production capability being impeded by high development of technology. For this reason, scalability is a more useful measure than previous growth when looking at opportunities. Figure 49 removes Heat Pumps and Ventilation & Air-tightness to look at growth within the other sub-sectors.

Figure 49: HertsLEP's 2020/21 Growth Rates vs. GVA of Level 2 Sub-sectors – Bubbles Sized by GVA – Heat Pumps and Ventilation & Air-tightness removed

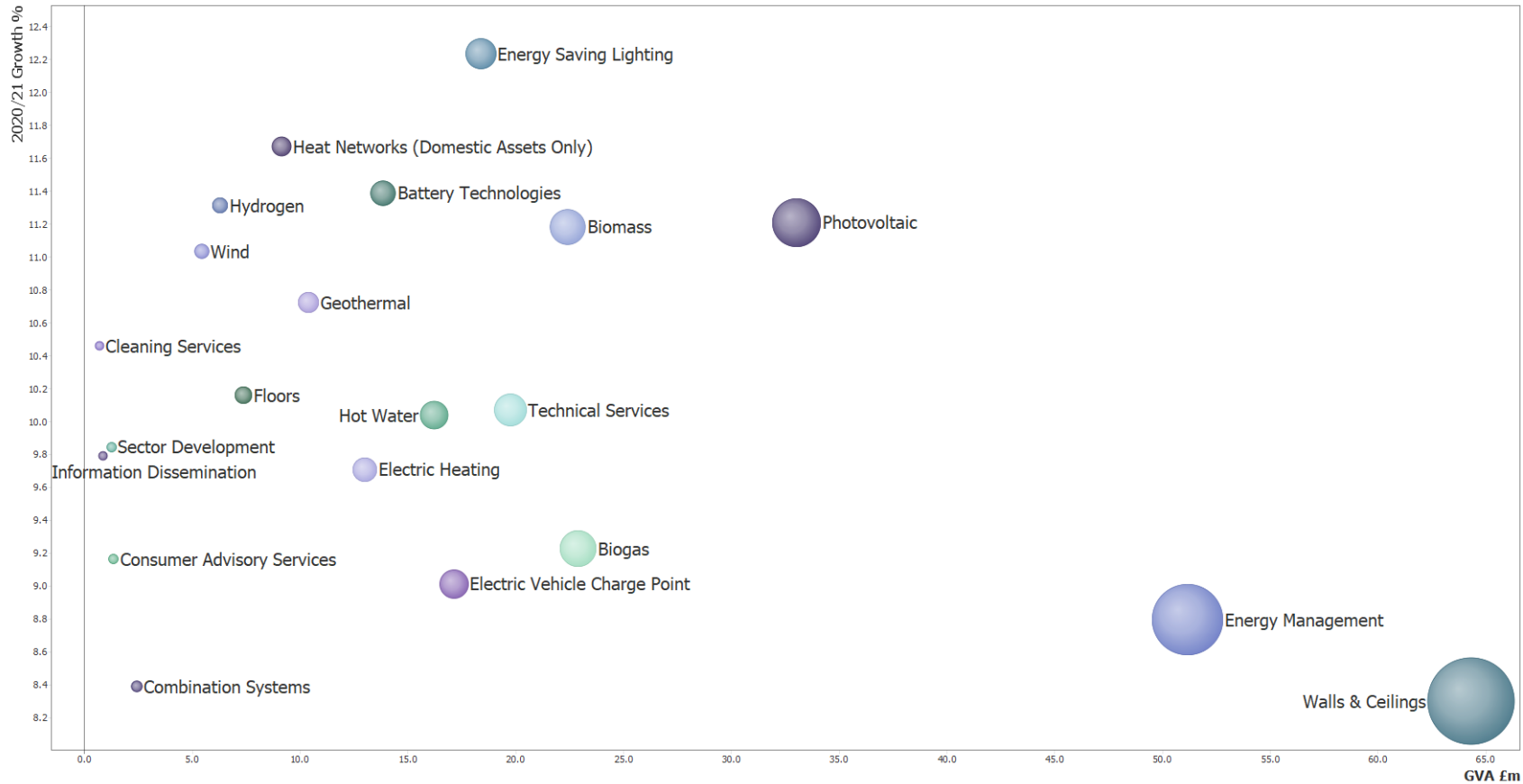


Figure 49 shows the same data as Figure 47, but with Heat Pumps and Ventilation & Air-tightness removed. When compared with Figure 47, Energy Saving Lighting saw the strongest growth in 2020/21, however their scalability is more average. Conversely, Customer Advisory Services is strong in terms of scalability but saw growth in line with the less scalable Electric Vehicle Charge Point. Similarly, Energy Management saw slow growth, but is more average in terms of scalability.

1.12 HertsLEP's DEESC Sector Barriers to Entry

In this section we look at the barriers to entry for the market, in the context of Financial Barriers to Entry, Operational Barriers to Entry, Technical Risk of Substitution, Customer Power and Market Risk of Substitution, where a grading of 1 represents a low barrier to entry and 3 represents a high barrier.

Figure 50: HertsLEP's 2020/21 Barriers to Entry, split by Level 2 Sub-sectors



Figure 50 shows barriers to entry are generally high, between 2.0 and 3.0, which is associated with length of time associated with both training and accreditation. They do vary between sub-sectors, but are similar for similar types of activity, for example, Market Risk of Substitution is more of a barrier within the advisory services such as Customer Advisory Services, Information and Dissemination, Sector Development and Technical Services.



1.13 HertsLEP’s DEESC Sector Forecasts

In this section we look at forecasts for the sector, Level 1 and Level 2, initially as a 5-year forecast, followed by growth requirements to reach Net Zero 2030 and Net Zero 2050. Forecasting for each has been performed on a ‘No Policy’ basis, as a baseline forecast and a ‘Current Policy’ forecast, which includes the Heat & Buildings Strategy (2021), Net Zero Strategy (2021), the Prime Minister’s Ten Point Plan (2020), Industrial and Clean Growth Strategies (2016), Energy White Paper (2020), Energy Security Policy (2021) and Industrial Decarbonisation Strategy (2022).

1.13.1 HertsLEP’s DEESC 5-Year Forecast

Figure 51: HertsLEP DEESC 5-Year Forecast for Sales and Employment, No Policy and with Current Policy

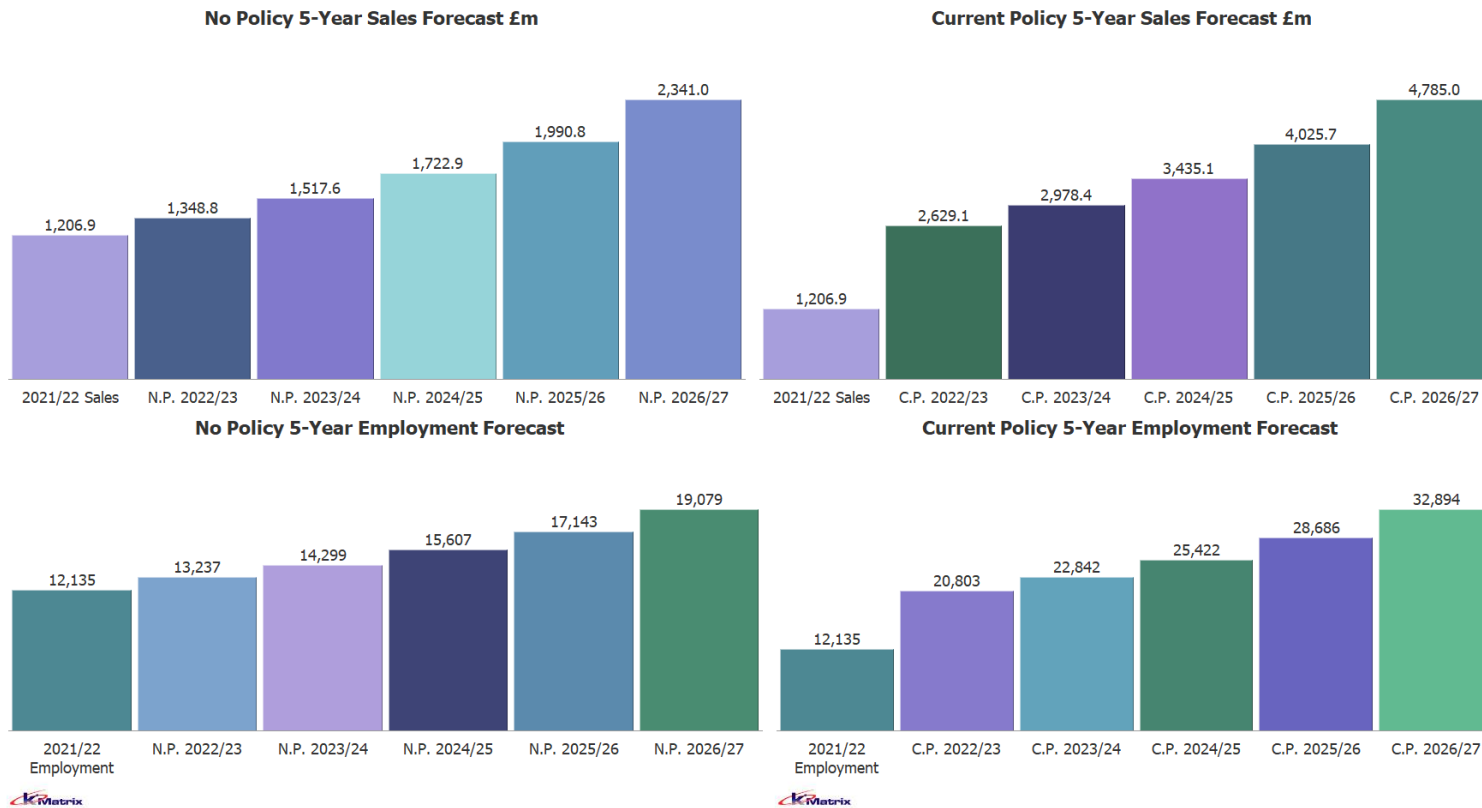


Figure 51 shows the 5-year forecasts for sales and employment, without policy and with current policy. No policy forecasts for sales and employment predict a more gradual growth for both measures, with year-on-year growth for sales starting at 11.8% and increasing to 17.6% and employment starting at 9.1% and increasing to 11.3% through the forecasting period. This compares with a large annual growth with current policy, which forecasts growth between 2021/22 and 2022/23 of 117.8% for sales and 71.4% for employment followed by annual growth more in-line with the no policy forecasts, with the growth between 2022/23 and 2023/24 of 13.3% for sales and 9.8% for employment, increasing to 18.9% and 14.7% respectively.

Figure 52: HertsLEP DEESC 5-Year Forecast for Sales and Employment, stacked by Level 1, No Policy and with Current Policy

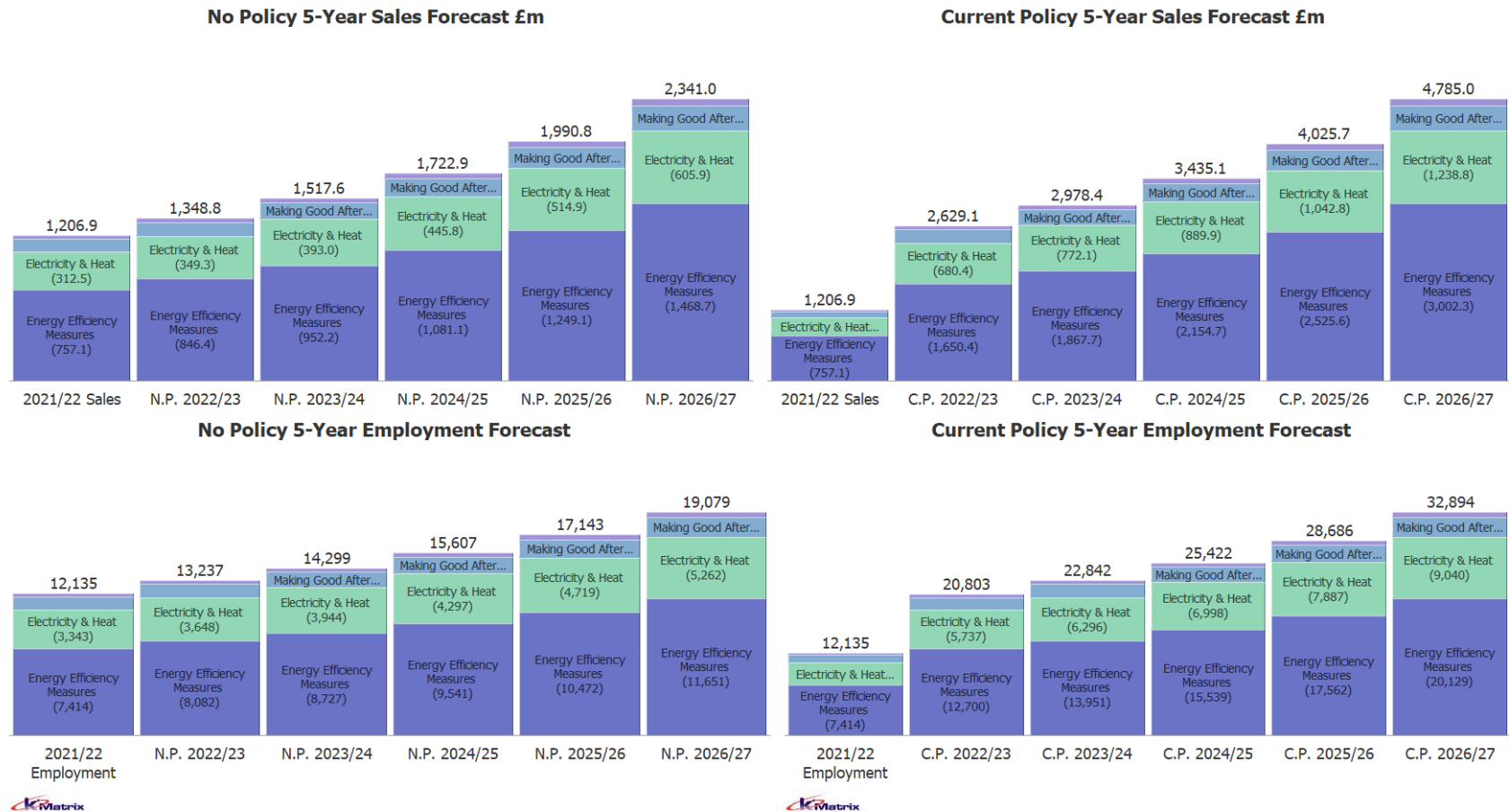


Figure 52 shows the same data as Figure 51, with the bars stacked by Level 1 sub-sectors and shows the same pattern of large growth in the first year under the current policy, with growth rates within the sub-sectors forecast to be in-line with those of the sector as a whole. A key point of the analysis is even without policy, the sector is forecast to see strong, double-digit growth throughout the forecast period and current policy has the potential to front-load that growth, resulting in a significantly larger market.

Figure 53: HertsLEP DEESC Sales and Employment Forecasts for Net Zero Scenarios, No Policy and with Current Policy

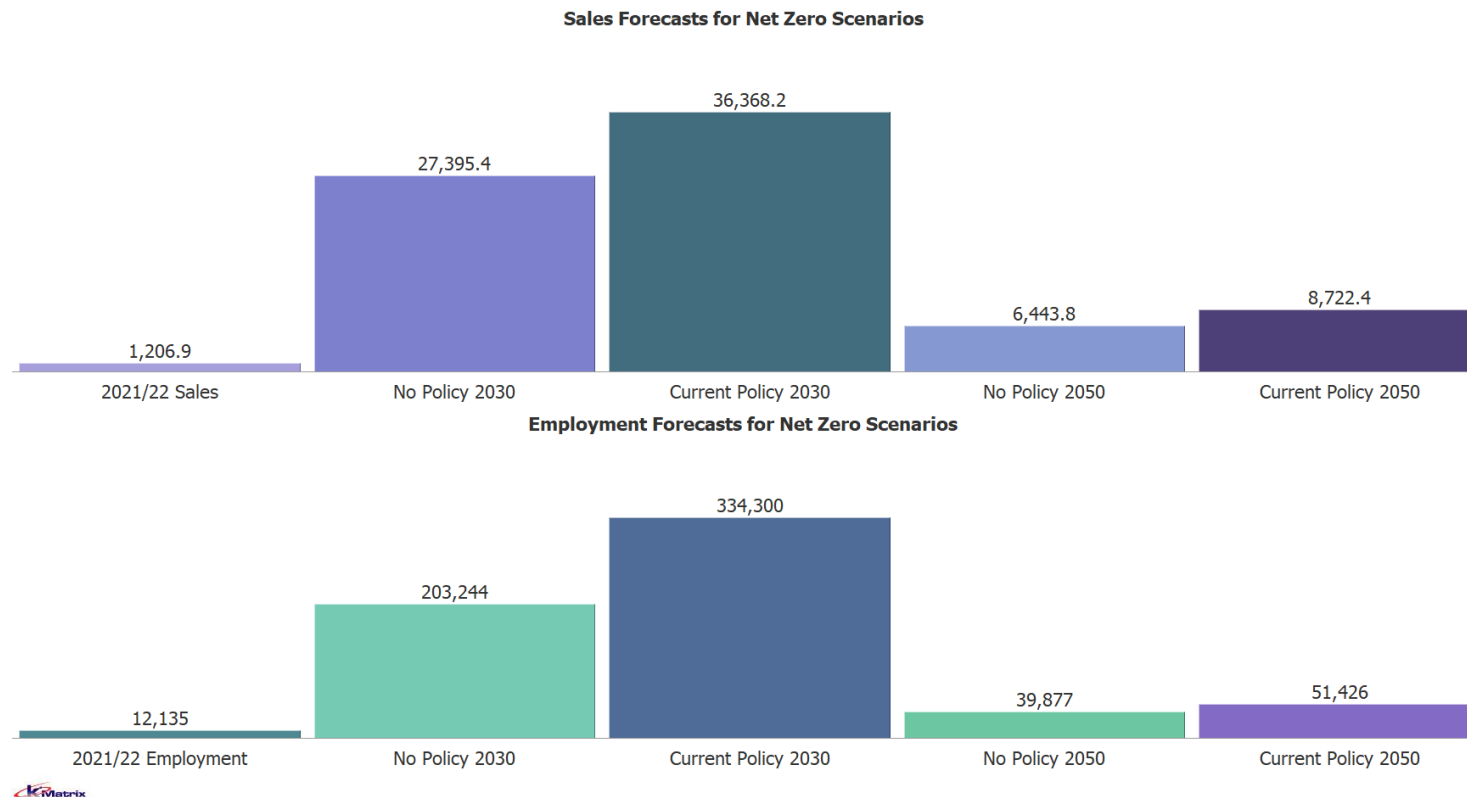


Figure 53 shows forecasts to reach net zero scenarios in 2030 and 2050, no policy and with current policy for sector sales and employment. To reach net zero by 2030 requires the largest proportional increase in both sales and employment, because there is a smaller timeframe to complete the retrofit of a finite number of properties. Under a no policy scenario, net zero 2030 would require a 22.7x increase in sales and a 16.7x increase in employment, and this increases with current policy to 30.1x in sales and 27.5x in employment. In comparison, net zero 2050 without policy intervention is expected to require 5.3x the sales and 3.3x the employment, which is forecast to increase to 7.2x the sales and 4.2x the employment with policy intervention.

Figure 54: HertsLEP DEESC Sales and Employment Forecasts for Net Zero Scenarios, No Policy and with Current Policy – Level 1



Figure 54 shows the same data as Figure 53, split by Level 1, which illustrates the whole market is forecast to require similar increases in order to fulfil net zero targets. For example, Energy Efficiency Measures under a no scenario policy, net zero 2030 would require a 22.7x increase in sales and a 16.7x increase in employment, and this increases with current policy to 30.1x in sales and 27.6x in employment. In comparison, net zero 2050 without policy intervention is expected to require 5.3x the sales and 3.3x the employment, which is forecast to increase to 7.2x the sales and 4.2x the employment with policy intervention.

Figure 55: HertsLEP DEESC Sales Forecasts for Net Zero Scenarios, No Policy and with Current Policy – Level 2

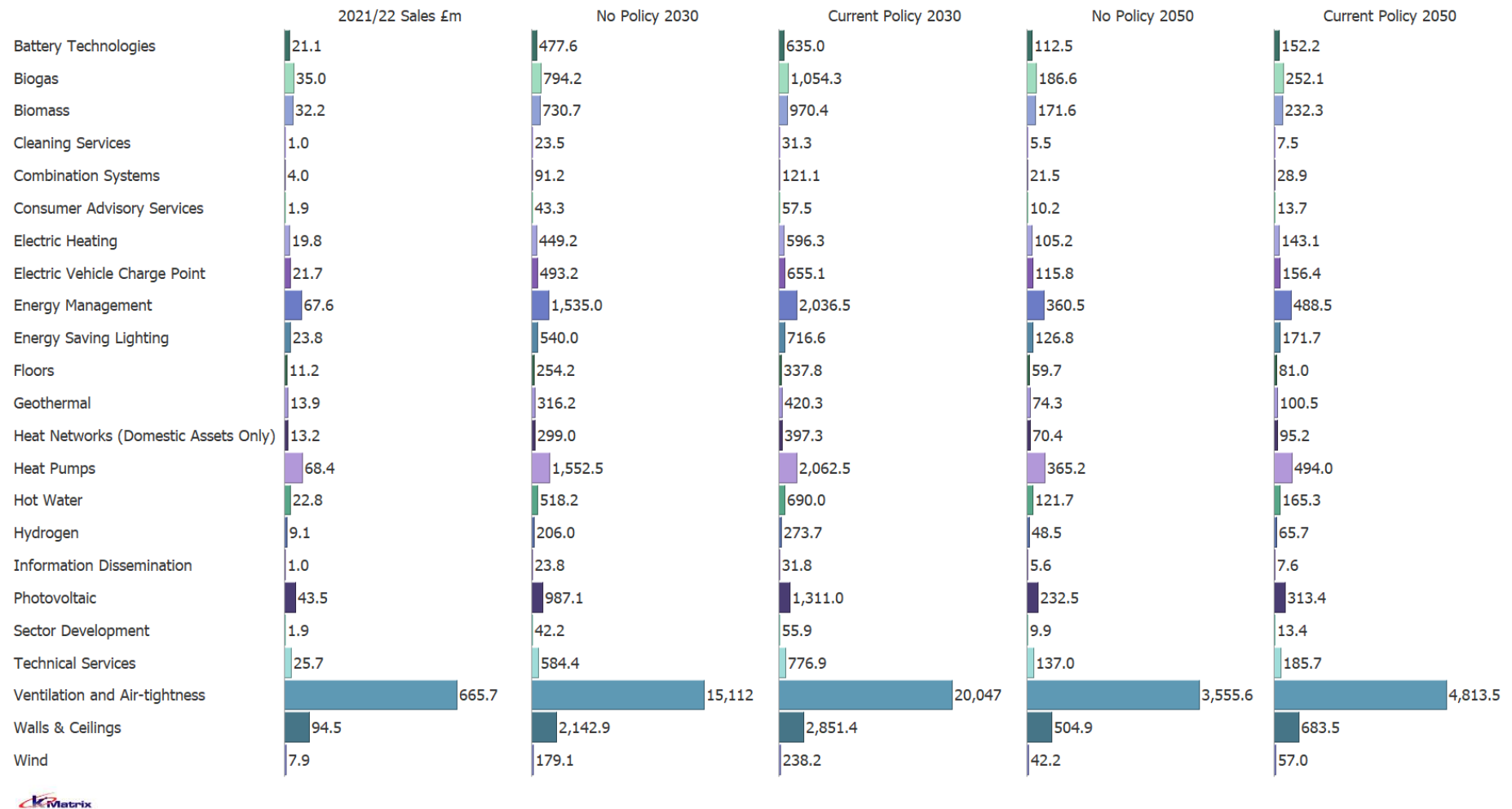


Figure 55 shows the sales data in Figure 54, split by Level 2, which illustrates the pattern of impact on growth of policy vs. no policy and timeframe to implement targets is similar across the sector with regards to sales.

Figure 56: HertsLEP DEESC Employment Forecasts for Net Zero Scenarios, No Policy and with Current Policy – Level 2



Figure 56 shows the employment data in Figure 54, split by Level 2, which illustrates the pattern of impact on growth of policy vs. no policy and timeframe to implement targets is also similar across the sector with regards to employment.

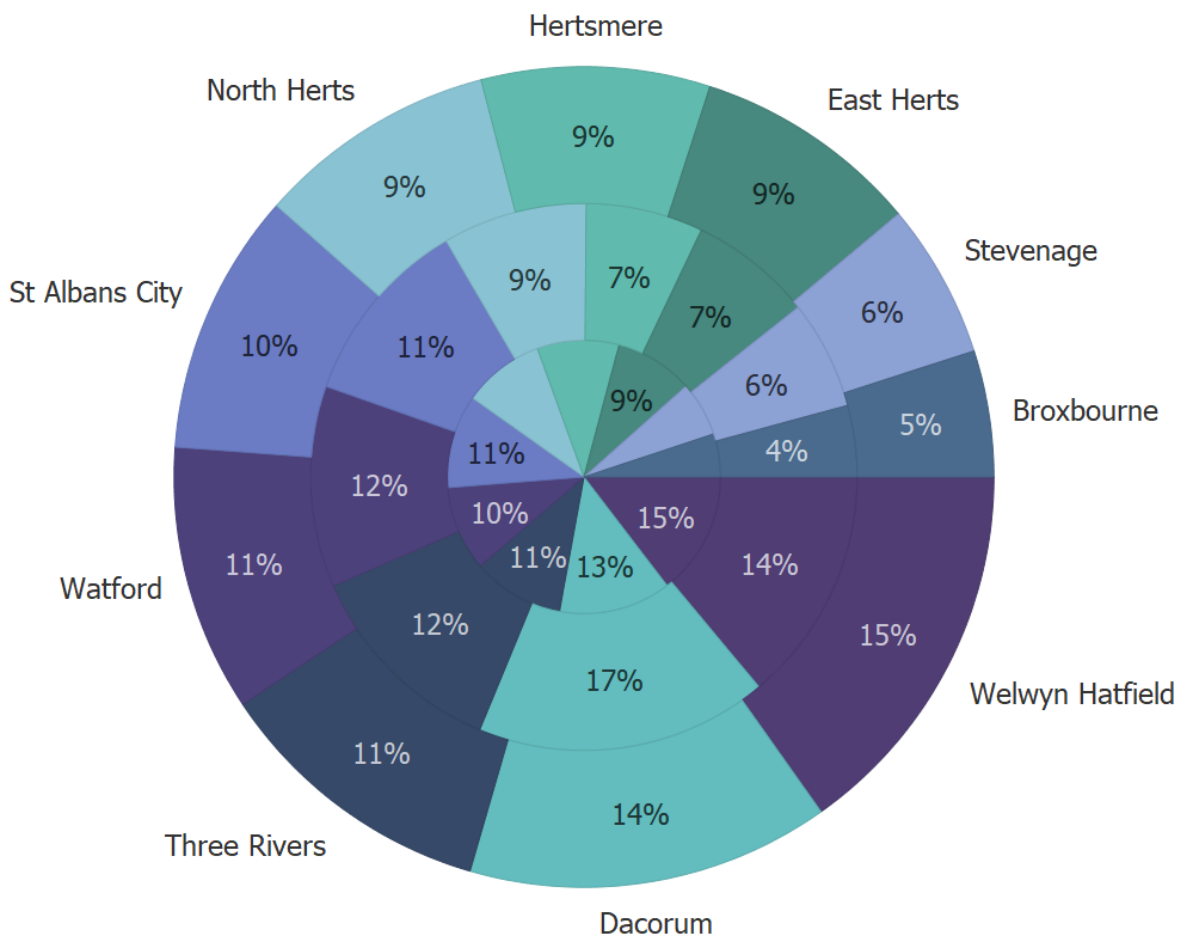
2. HertsLEP's DEESC by Local Authority

2.1 DEESC by Local Authority

This section of the report the analyses the HertsLEP's 10 Local Authorities.

Figure 57 shows DEESC for 2021/22 split by LA for sales (outer circle), companies (middle circle) and employment (inner circle). Welwyn Hatfield accounts for 15% of HertsLEP's DEESC sales, 14% of companies and 15% of employment. This is followed by Dacorum with 14% of Sales, Three Rivers with 11%, Watford 11% and St Albans City with 10%, with the smallest being Broxbourne with 5% of the market.

Figure 57: HertsLEP's DEESC 2021/22 by Local Authority for Sales, Companies and Employment



Local Authorities are analysed in more detail, by year, by economic measure and by DEESC activity in the following section.

2.2 Local Authority Analysis by Year and Sector

Table 7 shows the key metrics of Sales, Available Sales, GVA, Number of Companies and Number of Employees for each Local Authority at the Sector Level for three years with growth rates.

Sales represent the value of sales transactions (£m) and represent the turnover of companies. Available Sales (£m) provides a value for the portion of the market that is not 'locked' by long term contracts and is realistically available for market penetration by new market entrants, without the need for aggressive marketing or pricing strategies. GVA means the Gross Value Added and is the value of the transactions minus raw materials etc. and represents the profit made.

Available sales fluctuate in all Local Authorities as contracts end and new ones begin

GVA tracks sales, with differences in growth rates between the two being within 1-3 percentage points.

The fluctuation between company and employee numbers are not entirely independent, but they do not necessarily track each other. The fluctuation of employees can represent employees who are redeployed into other sectors within the same company and do not necessarily represent unemployment. Redeployment to other sectors (often with the same product e.g., financial analytics) is often due to the fluctuations in contracts affecting Available Sales.

Company number fluctuations might be a result of trading in other sectors, not that the company itself has ceased to trade.

Growth is variable between Local Authorities and between years, with strongest growth between 2019/20 and 2020/21 seen in Watford of 13.5% and the slowest in North Hertfordshire of 8.0%. The strongest growth between 2020/21 and 2021/22 was seen in Three Rivers with 12.9% and slowest in Watford with 7.8%.

Growth between years varied, with stronger growth between 2020/21 and 2021/22 than the previous year for 4 of the 10 Local Authorities.

Table 7: LA Sales, Available Sales, GVA, Number of Employees and Number of Companies 2019/20 to 2021/22

Local Authority	Turnover/ Sales £m				
	2019/20	Growth	2020/21	Growth	2021/22
Broxbourne	48.9	10.1%	53.9	11.3%	60.0
Dacorum	140.4	10.6%	155.3	11.1%	172.6
East Herts	88.6	10.9%	98.3	9.8%	108.0
Hertsmere	88.8	13.4%	100.6	8.1%	108.8
North Herts	94.6	8.0%	102.2	11.7%	114.2
St Albans City	102.0	11.4%	113.6	9.8%	124.8
Stevenage	61.0	10.1%	67.2	9.8%	73.8
Three Rivers	110.3	8.2%	119.3	12.9%	134.7
Watford	103.7	13.5%	117.7	7.8%	126.8
Welwyn Hatfield	150.8	10.7%	166.9	9.8%	183.2
Total	989.2	10.7%	1,095.1	10.2%	1,206.9

Local Authority	Available Sales £m				
	2019/20	Growth	2020/21	Growth	2021/22
Broxbourne	28.5	12.7%	32.1	9.8%	35.3
Dacorum	85.9	12.5%	96.7	9.7%	106.0
East Herts	58.8	9.9%	64.6	12.1%	72.4
Hertsmere	46.5	13.9%	53.0	6.2%	56.3
North Herts	68.0	6.8%	72.7	11.1%	80.8
St Albans City	68.6	11.3%	76.4	10.1%	84.1
Stevenage	36.5	11.9%	40.9	8.6%	44.4
Three Rivers	62.5	8.8%	68.0	12.4%	76.4
Watford	63.4	11.7%	70.8	8.2%	76.6
Welwyn Hatfield	89.3	10.9%	99.0	9.3%	108.2
Total	608.2	10.9%	674.2	9.8%	740.5

Local Authority	GVA £m				
	2019/20	Growth	2020/21	Growth	2021/22
Broxbourne	34.9	11.1%	38.8	11.2%	43.1
Dacorum	98.6	12.1%	110.6	10.4%	122.0
East Herts	69.3	11.3%	77.1	9.7%	84.5
Hertsmere	56.9	12.4%	64.0	8.2%	69.3
North Herts	76.5	6.8%	81.7	12.4%	91.8
St Albans City	79.6	11.5%	88.8	11.9%	99.3
Stevenage	40.6	10.6%	44.9	8.1%	48.6
Three Rivers	69.9	9.2%	76.4	13.7%	86.8
Watford	67.5	10.9%	74.9	8.4%	81.1
Welwyn Hatfield	104.7	10.1%	115.2	9.0%	125.7
Total	698.5	10.6%	772.3	10.4%	852.3

Local Authority	# Employees				
	2019/20	Growth	2020/21	Growth	2021/22
Broxbourne	507	9.1%	553	11.9%	619
Dacorum	1,315	8.7%	1,429	12.7%	1,612
East Herts	929	8.2%	1,006	12.0%	1,126
Hertsmere	960	12.1%	1,076	9.2%	1,176
North Herts	972	5.2%	1,022	14.5%	1,170
St Albans City	1,099	7.6%	1,182	13.5%	1,342
Stevenage	648	9.4%	709	10.8%	785
Three Rivers	1,076	5.4%	1,135	16.2%	1,319
Watford	996	10.6%	1,102	10.3%	1,215
Welwyn Hatfield	1,452	8.4%	1,573	12.6%	1,771
Total	9,953	8.4%	10,787	12.5%	12,135

Local Authority	# Companies				
	2019/20	Growth	2020/21	Growth	2021/22
Broxbourne	13	1.8%	13	10.6%	14
Dacorum	47	11.7%	53	11.3%	58
East Herts	22	-0.3%	22	11.9%	25
Hertsmere	20	5.6%	21	9.4%	23
North Herts	24	6.2%	26	11.8%	29
St Albans City	29	16.5%	34	11.1%	38
Stevenage	21	-3.3%	20	8.9%	22
Three Rivers	31	17.0%	36	15.7%	41
Watford	28	31.6%	37	9.3%	40
Welwyn Hatfield	44	-3.1%	43	9.4%	47
Total	279	9.0%	304	11.0%	338

2.3 Local Authority Analysis by Year – Level 1

Figure 58: HertsLEP’s LAs DEESC Sales 2021/22 (Level 1)

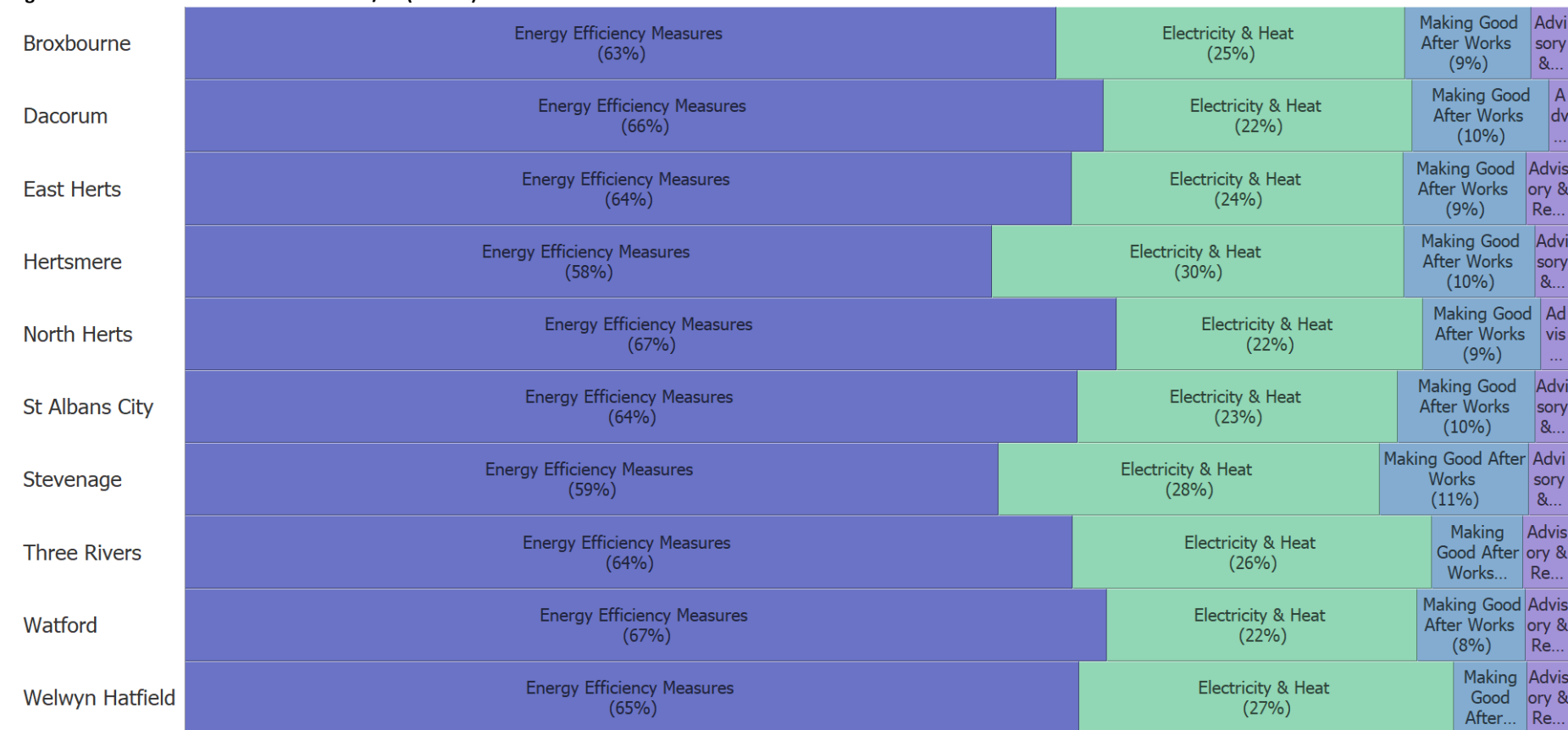


Figure 58 shows the different profiles of the HertsLEP’s LAs when sales is split at Level 1. The LAs show variation between the Level 1 sub-sectors, with Energy Efficiency Measures being between 58% for Hertsmere and 67% in North Hertfordshire and Watford; Electricity and Heat between 22% in Dacorum, North Hertfordshire and Watford and 30% in Hertsmere; Making Good After Works between 5% and 11% and Advisory and Related Services between 1% and 3%, showing subtle variations in activity within the ESSC sector. This is further confirmed by Figure 59 below.

2.4 Local Authority Analysis by Year – Level 2

Figure 59: HertsLEP’s LAs DEESC Sales 2021/22 (Level 2)

Broxbourne	Ventilation and Air-tightness (55%)	Walls & Ceilings (8%)	Energy Management (5%)	Heat Pumps (5%)	Biogas (4%)	Photovoltaics (3%)	Biomass (3%)	Technical (3%)	Energy (3%)	Hot Water (3%)	13 others (11%)
Dacorum	Ventilation and Air-tightness (58%)	Walls & Ceilings (9%)	Energy Management (4%)	Heat Pumps (4%)	Hot Water (3%)	Energy (3%)	Photovoltaics (3%)	Biomass (3%)	Batteries (3%)	13 others (9%)	
East Herts	Ventilation and Air-tightness (58%)	Walls & Ceilings (8%)	Energy Management (5%)	Heat Pumps (5%)	Photovoltaics (3%)	Biogas (3%)	Biomass (3%)	Technical (3%)	Energy (3%)	Electric (3%)	13 others (10%)
Hertsmere	Ventilation and Air-tightness (52%)	Walls & Ceilings (8%)	Photovoltaics (5%)	Heat Pumps (5%)	Energy Management (3%)	Biogas (3%)	Biomass (3%)	Electric (3%)	Technical (3%)	Hot Water (3%)	13 others (12%)
North Herts	Ventilation and Air-tightness (60%)	Walls & Ceilings (8%)	Energy Management (4%)	Photovoltaics (4%)	Heat Pumps (3%)	Biomass (3%)	Electric (3%)	Energy (3%)	Batteries (3%)	Technical (3%)	13 others (9%)
St Albans City	Ventilation and Air-tightness (55%)	Walls & Ceilings (9%)	Energy Management (8%)	Heat Pumps (5%)	Photovoltaics (4%)	Biogas (3%)	Biomass (3%)	Electric (3%)	Technical (3%)	Hot Water (3%)	13 others (8%)
Stevenage	Ventilation and Air-tightness (52%)	Walls & Ceilings (10%)	Photovoltaics (7%)	Energy Management (4%)	Heat Pumps (4%)	Biogas (4%)	Technical (3%)	Biomass (3%)	Electric (3%)	Hot Water (3%)	13 others (10%)
Three Rivers	Ventilation and Air-tightness (52%)	Energy Management (9%)	Heat Pumps (7%)	Walls & Ceilings (6%)	Biogas (4%)	Energy (4%)	Technical (3%)	Photovoltaics (3%)	Batteries (3%)	13 others (9%)	
Watford	Ventilation and Air-tightness (57%)	Energy Management (7%)	Walls & Ceilings (7%)	Heat Pumps (4%)	Biomass (3%)	Technical (3%)	Photovoltaics (3%)	Electric (3%)	Batteries (3%)	Energy (3%)	13 others (10%)
Welwyn Hatfield	Ventilation and Air-tightness (57%)	Heat Pumps (6%)	Photovoltaics (4%)	Energy Management (4%)	Walls & Ceilings (3%)	Energy (3%)	Electric (3%)	Technical (3%)	Biomass (3%)	Electric (3%)	13 others (11%)

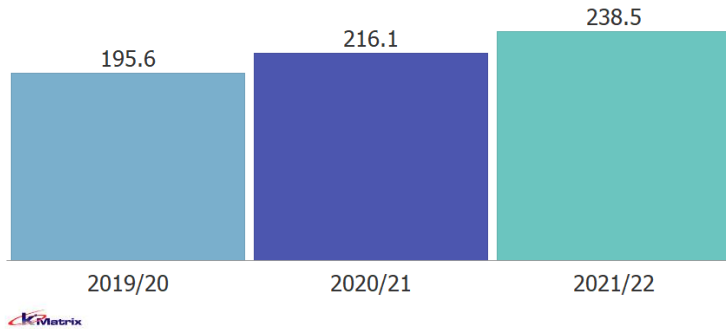


Figure 59 extends the analysis to include the Top 10 sub-sectors for each LA. Ten sub-sectors account for 88-92% of the total value, but the sub-sectors and their rankings do differ subtly across the LAs. There are consistent sub-sectors running through the LAs and these include Ventilation & Air-tightness, Walls & Ceilings, Energy Management, Photovoltaics and Heat Pumps, they are represented in all of the LAs and are generally in the top five sub-sectors.

3. HertsLEP’s DEESC & International Trade

This section of the report addresses HertsLEP’s DEESC Exports over the past three years when compared with UK totals and then identifies leading DEESC export products and services and their destination markets.

Figure 60: HertsLEP’s Exports (£m) 2019/20 to 2021/22

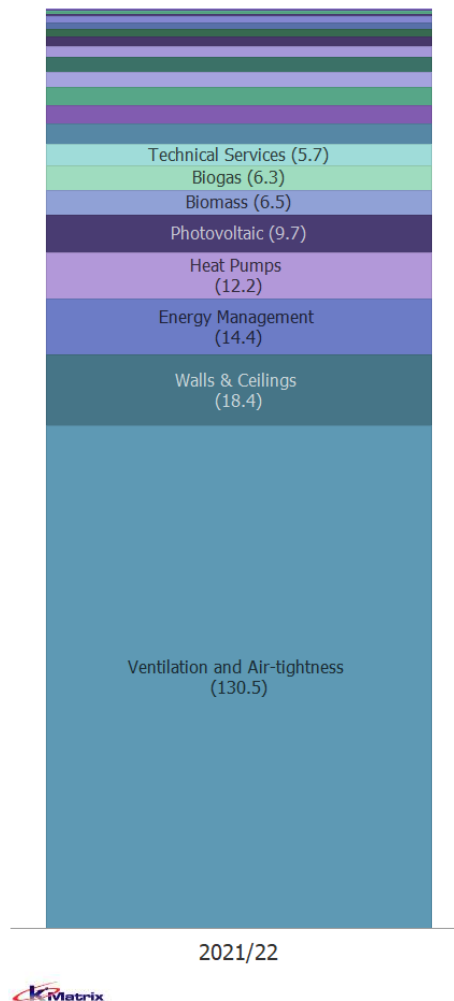


The value of HertsLEP’s DEESC Exports was £195.6m in 2019/20 and despite the Covid-19 pandemic has grown to £238.5m in 2021/22.

Growth between 2019/20 and 2020/21 was 10.5% and growth between 2020/21 and 2021/22 was 10.4%.

This is compared with GSENZH growth of 10.3% and 10.8% and UK growth of 12.0% and 18.7%.

Figure 61: HertsLEP’s Exports (%) by Sub-Sector 2021/22

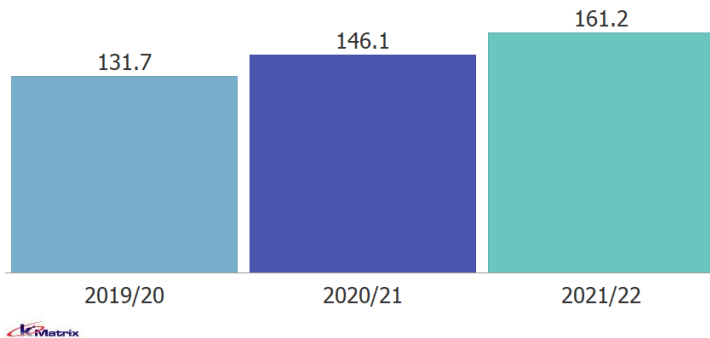


HertsLEP represented 4.3% of all GSENZH DEESC exports in 2021/22. This is in line with the HertsLEP’s 4.3% of overall GSENZH Sales. This means that the HertsLEP has a similar share of the export market to the GSENZH domestic market.

Figure 61 shows the proportion of HertsLEP DEESC exports by Level 2 sub-sector, with Ventilation & Air-tightness (55%), Walls & Ceilings (8%), Energy Management (6%), Heat Pumps (5%) and Photovoltaic (4%) being the leading sub-sectors and accounting for 78% of all HertsLEP’s DEESC exports.

This compares with GSENZH proportions of Ventilation & Air-tightness (57%), Walls & Ceilings (8%), Energy Management (5%), Heat Pumps (5%) and Photovoltaic (4%) being the leading sub-sectors and accounting for 78% of all GSENZH DEESC exports.

Figure 62: HertsLEP's Imports (£m) 2019/20 to 2021/22

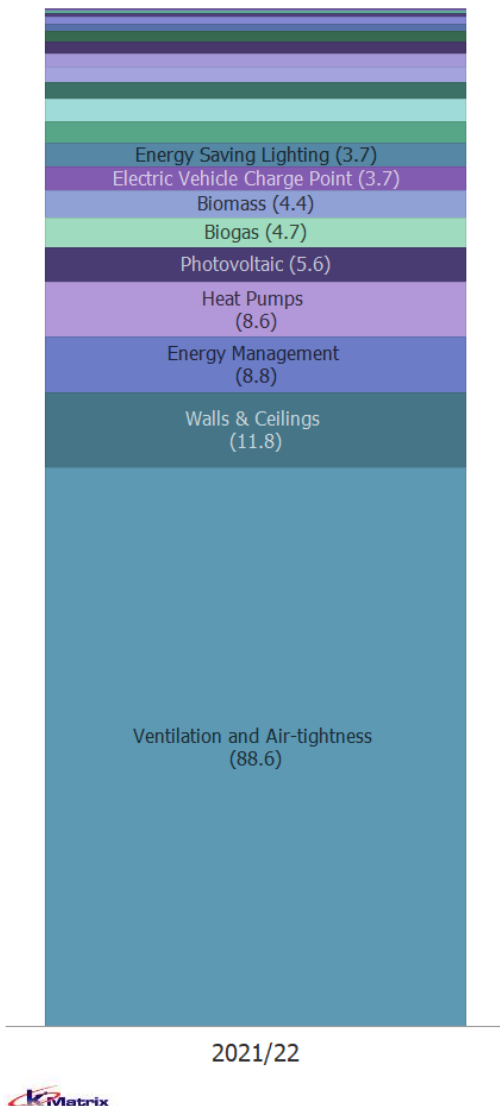


The value of HertsLEP's DEESC Imports was £131.7m in 2019/20 and despite the Covid-19 pandemic has grown to £161.2m in 2021/22.

Growth between 2019/20 and 2020/21 was 10.9% and growth between 2020/21 and 2021/22 was 10.3%.

This is compared with GSENZH growth of 10.2% and 10.8% and UK growth of 14.9% and 14.6%.

Figure 63: HertsLEP's Imports (%) by Sub-Sector 2021/22



HertsLEP represented 4.1% of all GSENZH DEESC imports in 2021/22. This is in line with the HertsLEP's 4.3% of overall GSENZH Sales. This means that the HertsLEP has a similar share of the import market to the GSENZH domestic market.

Figure 63 shows the proportion of HertsLEP DEESC imports by Level 2 sub-sector, with Ventilation & Air-tightness (55%), Walls & Ceilings (7%), Energy Management (5%), Heat Pumps (5%) and Photovoltaic (3%) being the leading sub-sectors and accounting for 77% of all HertsLEP's DEESC imports.

This compares with GSENZH proportions of Ventilation & Air-tightness (55%), Walls & Ceilings (8%), Energy Management (6%), Heat Pumps (6%) and Photovoltaic (4%) being the leading sub-sectors and accounting for 78% of all HertsLEP's DEESC imports.

The Covid 19 pandemic impacted imports and exports in many sectors, however the DEESC market still experienced healthy international trade despite restrictions, with minimal disruption.

Table 8: HertsLEP's DEESC Exports as a % of Sales 2019/20 to 2021/22

Level 1	Level 2	2019/20			2020/21			2021/22		
		Sales £m	Exports £m	Exports as % of Sales	Sales £m	Exports £m	Exports as % of Sales	Sales £m	Exports £m	Exports as % of Sales
Advisory & Rel. Ser.	Consumer Advisory Services	1.5	0.3	22.1%	1.7	0.4	21.8%	1.9	0.4	21.8%
Advisory & Rel. Ser.	Information Dissemination	0.9	0.2	24.1%	1.0	0.2	23.7%	1.0	0.3	23.9%
Advisory & Rel. Ser.	Sector Development	1.5	0.3	19.4%	1.7	0.3	19.2%	1.9	0.4	19.2%
Advisory & Rel. Ser.	Technical Services	20.9	4.6	22.0%	23.3	5.1	22.1%	25.7	5.7	22.2%
Electricity & Heat	Battery Technologies	17.3	3.2	18.5%	19.0	3.5	18.5%	21.1	3.9	18.4%
Electricity & Heat	Biogas	28.7	5.1	17.9%	32.1	5.8	17.9%	35.0	6.3	18.0%
Electricity & Heat	Biomass	26.3	5.3	20.2%	29.1	5.8	20.1%	32.2	6.5	20.1%
Electricity & Heat	Combination Systems	3.3	0.6	18.3%	3.7	0.7	18.2%	4.0	0.7	17.9%
Electricity & Heat	Electric Heating	16.2	3.2	20.0%	18.1	3.6	20.1%	19.8	3.9	19.8%
Electricity & Heat	Electric Vehicle Charge Point	17.7	3.9	22.0%	19.9	4.4	22.0%	21.7	4.8	22.0%
Electricity & Heat	Geothermal	11.4	2.3	20.2%	12.6	2.6	20.5%	13.9	2.8	20.3%
Electricity & Heat	Heat Networks	10.8	2.0	18.9%	11.8	2.2	18.9%	13.2	2.5	18.8%
Electricity & Heat	Heat Pumps	56.0	10.0	17.9%	53.1	10.7	20.1%	68.4	12.2	17.9%
Electricity & Heat	Hot Water	18.8	3.8	20.2%	20.9	4.2	19.9%	22.8	4.6	20.0%
Electricity & Heat	Hydrogen	7.4	1.4	18.7%	8.2	1.5	18.7%	9.1	1.7	18.7%
Electricity & Heat	Photovoltaic	35.9	8.0	22.4%	39.6	8.8	22.1%	43.5	9.7	22.2%
Electricity & Heat	Wind	6.5	1.3	19.8%	7.1	1.4	19.8%	7.9	1.6	19.9%
Energy Efficiency Meas.	Energy Management	55.7	11.7	21.1%	61.9	13.1	21.2%	67.6	14.4	21.2%
Energy Efficiency Meas.	Energy Saving Lighting	19.4	4.1	21.2%	21.6	4.6	21.4%	23.8	5.2	21.8%
Energy Efficiency Meas.	Ventilation & Air-tightness	545.0	106.8	19.6%	610.0	118.0	19.3%	665.7	130.5	19.6%
Making Good After Works	Cleaning Services	0.9	0.2	23.0%	0.9	0.2	22.5%	1.0	0.2	22.5%
Making Good After Works	Floors	9.2	1.7	18.9%	10.1	1.9	18.9%	11.2	2.1	18.9%
Making Good After Works	Walls & Ceilings	77.7	15.2	19.6%	87.7	17.0	19.4%	94.5	18.4	19.4%
Total		989.2	195.6	19.8%	1,095.1	216	19.7%	1,206.9	238.5	19.8%

In Table 8 HertsLEP's DEESC exports are shown by sub-sector for each of the three years of the report and have been expressed as a percentage of that sub-sector's overall sales. The overall average for 2021/22 is 19.8%, with variation between sub-sectors such as 17.9% for Heat Pumps and 23.9% for Information Dissemination.

The average for the wider GSENZH is 20.1%, with variation between 17.7% for Heat Pumps and 21.0% for Battery Technologies.

Table 9: HertsLEP's DEESC Available Exports and Available Exports as a % of Exports 2019/20 to 2021/22

Level 1	Level 2	2019/20			2020/21			2021/22		
		Exports £m	Available Exports £m	Avail. as % of Exports	Exports £m	Available Exports £m	Avail. as % of Exports	Exports £m	Available Exports £m	Avail. as % of Exports
Advisory & Rel. Ser.	Consumer Advisory Services	0.3	0.2	52.6%	0.4	0.2	52.7%	0.4	0.2	53.1%
Advisory & Rel. Ser.	Information Dissemination	0.2	0.1	50.6%	0.2	0.1	51.0%	0.3	0.1	50.7%
Advisory & Rel. Ser.	Sector Development	0.3	0.2	64.3%	0.3	0.2	64.9%	0.4	0.2	64.9%
Advisory & Rel. Ser.	Technical Services	4.6	2.8	60.7%	5.1	3.1	59.8%	5.7	3.4	59.7%
Electricity & Heat	Battery Technologies	3.2	2.3	70.4%	3.5	2.5	70.2%	3.9	2.7	69.9%
Electricity & Heat	Biogas	5.1	3.3	64.4%	5.8	3.7	64.5%	6.3	4.0	64.4%
Electricity & Heat	Biomass	5.3	3.1	59.0%	5.8	3.5	59.5%	6.5	3.8	59.3%
Electricity & Heat	Combination Systems	0.6	0.4	73.5%	0.7	0.5	72.8%	0.7	0.5	74.0%
Electricity & Heat	Electric Heating	3.2	2.0	62.6%	3.6	2.2	61.3%	3.9	2.5	63.0%
Electricity & Heat	Electric Vehicle Charge Point	3.9	2.0	50.0%	4.4	2.2	50.4%	4.8	2.4	50.4%
Electricity & Heat	Geothermal	2.3	1.3	54.5%	2.6	1.4	54.2%	2.8	1.5	54.7%
Electricity & Heat	Heat Networks	2.0	1.3	65.5%	2.2	1.5	64.9%	2.5	1.6	66.1%
Electricity & Heat	Heat Pumps	10.0	5.8	57.7%	10.7	6.2	57.8%	12.2	7.0	57.7%
Electricity & Heat	Hot Water	3.8	2.0	53.8%	4.2	2.3	55.0%	4.6	2.5	54.9%
Electricity & Heat	Hydrogen	1.4	0.8	61.0%	1.5	0.9	60.9%	1.7	1.0	61.2%
Electricity & Heat	Photovoltaic	8.0	4.1	50.6%	8.8	4.4	50.7%	9.7	4.9	51.1%
Electricity & Heat	Wind	1.3	0.7	56.7%	1.4	0.8	57.3%	1.6	0.9	56.8%
Energy Efficiency Meas.	Energy Management	11.7	7.3	61.8%	13.1	8.1	61.8%	14.4	8.8	61.0%
Energy Efficiency Meas.	Energy Saving Lighting	4.1	2.3	55.1%	4.6	2.4	52.8%	5.2	2.7	52.5%
Energy Efficiency Meas.	Ventilation & Air-tightness	106.8	58.1	54.4%	118.0	64.9	55.0%	130.5	71.9	55.1%
Making Good After Works	Cleaning Services	0.2	0.1	57.1%	0.2	0.1	57.8%	0.2	0.1	57.2%
Making Good After Works	Floors	1.7	1.0	57.7%	1.9	1.1	57.2%	2.1	1.2	57.6%
Making Good After Works	Walls & Ceilings	15.2	8.6	56.3%	17.0	9.7	56.8%	18.4	10.4	56.7%
Total		195.6	109.8	56.2%	216.1	122	56.5%	238.5	134.7	56.5%

In Table 9 HertsLEP's DEESC available exports are shown by sub-sector for each of the three years of the report and have been expressed as a percentage of that sub-sector's overall exports. The overall average for 2021/22 is 56.5% and sub-sectors with above average available export to export ratio in 2021/22 and more than £5m in exports are: Photovoltaics 65.4%; Energy Management 62.8%; Battery Technologies 62.7%; Ventilation & Air-tightness 60.9 and Electric Vehicle Charge Point 59.9%.

This compares with the GSENZH average of 58.0%, where sub-sectors with above average available export ratio and at least double-digit exports are: Biogas 65.7%; Combination Systems 63.8%; Wind 63.8%; Heat Networks 62.3%; Floors 61.8%; Electric Heating 61.6%; Energy Management 61.2%; Heat Pumps 60.3%; Hydrogen 60.1%; Hot Water 59.5%; Technical Services 59.4%; Walls and Ceilings 58.8% and Biomass 58.7%.

Table 10: HertsLEP's DEESC Imports as a % of Sales 2019/20 to 2021/22

Level 1	Level 2	2019/20			2020/21			2021/22		
		Sales £m	Imports £m	Imports as % of Sales	Sales £m	Imports £m	Imports as % of Sales	Sales £m	Imports £m	Imports as % of Sales
Advisory & Rel. Ser.	Consumer Advisory Services	1.5	0.2	11.2%	1.7	0.2	11.0%	1.9	0.2	11.2%
Advisory & Rel. Ser.	Information Dissemination	0.9	0.1	11.9%	1.0	0.1	11.8%	1.0	0.1	12.0%
Advisory & Rel. Ser.	Sector Development	1.5	0.2	15.4%	1.7	0.3	15.4%	1.9	0.3	15.4%
Advisory & Rel. Ser.	Technical Services	20.9	2.8	13.5%	23.3	3.1	13.5%	25.7	3.5	13.5%
Electricity & Heat	Battery Technologies	17.3	2.1	12.4%	19.0	2.4	12.5%	21.1	2.6	12.5%
Electricity & Heat	Biogas	28.7	3.9	13.5%	32.1	4.3	13.4%	35.0	4.7	13.5%
Electricity & Heat	Biomass	26.3	3.5	13.5%	29.1	3.9	13.4%	32.2	4.4	13.5%
Electricity & Heat	Combination Systems	3.3	0.5	14.9%	3.7	0.6	14.9%	4.0	0.6	15.1%
Electricity & Heat	Electric Heating	16.2	2.0	12.2%	18.1	2.2	12.3%	19.8	2.4	12.2%
Electricity & Heat	Electric Vehicle Charge Point	17.7	3.1	17.2%	19.9	3.4	17.2%	21.7	3.7	17.2%
Electricity & Heat	Geothermal	11.4	1.7	15.3%	12.6	1.9	15.2%	13.9	2.1	15.2%
Electricity & Heat	Heat Networks	10.8	1.6	14.5%	11.8	1.7	14.7%	13.2	1.9	14.6%
Electricity & Heat	Heat Pumps	56.0	7.0	12.6%	53.1	7.5	14.2%	68.4	8.6	12.6%
Electricity & Heat	Hot Water	18.8	2.9	15.5%	20.9	3.2	15.2%	22.8	3.5	15.4%
Electricity & Heat	Hydrogen	7.4	1.0	13.3%	8.2	1.1	13.2%	9.1	1.2	13.3%
Electricity & Heat	Photovoltaic	35.9	4.6	12.7%	39.6	5.1	12.8%	43.5	5.6	12.8%
Electricity & Heat	Wind	6.5	0.8	12.7%	7.1	0.9	12.8%	7.9	1.0	12.7%
Energy Efficiency Meas.	Energy Management	55.7	7.3	13.0%	61.9	8.1	13.0%	67.6	8.8	13.1%
Energy Efficiency Meas.	Energy Saving Lighting	19.4	3.0	15.2%	21.6	3.2	15.0%	23.8	3.7	15.4%
Energy Efficiency Meas.	Ventilation & Air-tightness	545.0	72.4	13.3%	610.0	80.3	13.2%	665.7	88.6	13.3%
Making Good After Works	Cleaning Services	0.9	0.1	14.6%	0.9	0.1	14.7%	1.0	0.2	14.9%
Making Good After Works	Floors	9.2	1.4	14.9%	10.1	1.5	14.9%	11.2	1.7	15.0%
Making Good After Works	Walls & Ceilings	77.7	9.5	12.2%	87.7	10.9	12.5%	94.5	11.8	12.4%
Total		989.2	131.7	13.3%	1,095.1	146	13.3%	1,206.9	161.2	13.4%

Table 10 shows HertsLEP's DEESC imports sub-sector for each of the three years of the report and have been expressed as a percentage of that sub-sector's overall sales. The overall average for 2021/22 is 13.4%, with variation between sub-sectors such as 12.2% for Electric Heating and 17.2% for Electric Vehicle Charge Point.

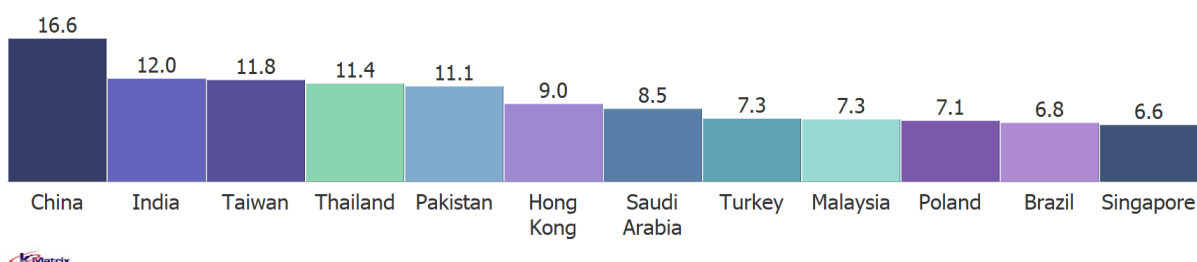
The average for the wider GSENZH is 14.2%, with variation between 13.1% for Heat Pumps and 15.6% for Biomass and Cleaning Services.

The Top 12 destinations for HertsLEP’s DEESC exports are shown in Figure 64. China is the top destination, followed by India, Taiwan, Thailand, Pakistan, Hong Kong, Saudi Arabia, Turkey, Malaysia, Poland, Brazil and Singapore.

The USA, Germany and France, who are three of the UK's largest trading partners, are conspicuously absent from the Top 12 destinations for DEESC. This follows the same trend as the trading pattern for the wider Low Carbon Environmental Goods and Services (LCEGS) sector, which has been a feature of international trade in LCEGS since 2007/08 when the analysis first began.

The DEESC and wider LCEGS sector has a very different trading pattern to other mainstream UK sectors, predominantly due to long term, historic trading relationships within this sector.

Figure 64: Top 12 HertsLEP’s DEESC Export Destinations 2021/22



Appendix 1

Definition of the Sector

The **Domestic Energy Efficiency Supply Chain** sector is divided into four Level 1 sub-sectors – Electricity & Heat, Energy Efficiency Measures, Making Good After Works and Advisory & Related Services. These are in turn divided into 23 Level 2 sub-sectors:

- The Electricity & Heat sub-sector is made up of the following: Battery Technologies, Biogas, Biomass, Heat Pumps, Electric Heating, Hot Water Geothermal, Heat Networks (Domestic Assets Only), Hydrogen, Photovoltaic, Wind, Electric Vehicle Charge Point and Combination Systems
- The Energy Efficiency Measures sub-sector is made up of the following: Energy Saving Lighting, Energy Management and Ventilation & Air-tightness
- The Making Good After Works sub-sector is made up of the following: Cleaning Services, Walls & Ceilings and Floors
- The Advisory & Related Services sub-sector is made up of the following: Consumer Advisory Services, Technical Services, Information Dissemination and Sector Development

Electricity & Heat activities include 14 Level 2 sub-sectors, divided into 28 Level 3 activity groupings:

- Battery Technologies includes both electrical and thermal stores and batteries
- Biogas includes furnace and energy systems, domestic plants and boilers and related systems
- Biomass includes furnace and energy systems and boilers and related systems
- Heat Pumps includes Air, Ground and Water Sources Heat Pumps
- Electric Heating includes High Retention Storage Heaters
- Hot Water includes Hot Water Systems
- Geothermal includes both horizontal and vertical systems
- Heat Networks (Domestic Assets Only) includes both external and internal physical assets present on the property, it excludes the wider Heat Network
- Hydrogen includes fuels cells, cooking appliances and boilers
- Photovoltaic includes both Photovoltaic PV and Solar Thermal
- Wind entails domestic small wind turbines
- Electric Vehicle Charge Point include both on-road and off-road solutions
- Combination Systems entail project where two or more of the above technologies are combined

Energy Efficiency Measures includes 3 Level 2 sub-sectors, divided into 87 Level 3 activity groupings:

- Energy Saving Lighting Equipment includes all energy saving lighting
- Energy Management includes Home Automation, Smart Heating Controls, Home Energy Systems Integration and Energy Management Systems

- Ventilation & Air-tightness includes Ventilation and Heat Recovery Systems, Energy efficient windows and doors and insulation for walls, roof/lofts and floors and roofing including Park Home Insulation

Making Good After Works includes 3 Level 2 sub-sectors, divided into 13 Level 3 activity groupings:

- Cleaning Services includes Contract Cleaning
- Walls & Ceilings includes plastering and plaster boarding, painting and decorating
- Floors includes both hard flooring and carpet fitting

Advisory & Related Services includes 4 Level 2 sub-sectors, divided into 18 Level 3 activity groupings:

- Consumer Advisory Services includes Funding Advice, After Sales Support and Energy Tariff Advice
- Technical Services includes a range of services such as specification, project planning, retrofit coordination, architectural services, environmental consultancy, monitoring and evaluation, building surveys and planning application services
- Information Dissemination includes Societal Engagement Campaigns, Newscasting and Industry-oriented Publications
- Sector Development includes Societal Behaviour Studies and activities related to Business Model Development, Business Support & Development and Sales Strategy Training

Level 2 sub-sector detail within Level 1 groupings:

Electricity & Heat

Battery Technologies sub-sector includes both electrical and heat battery storage. The activity codes relating to each Level 3 sub-sector include:

- Electrical Batteries, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Thermal Stores (Sensible Heat Storage), split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Thermal Batteries (Latent Heat Storage), split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Thermal Batteries (Thermochemical Heat Storage), split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance

Biogas sub-sector includes furnace and energy systems, domestic plants and boilers and related systems. The activity codes relating to each Level 3 sub-sector include:

- Biogas Furnace Systems, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Biogas Energy Systems, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance

- Biogas Plant (Domestic), split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Biogas Boilers and Related Systems, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance

Biomass Technologies sub-sector includes furnace and energy systems and boilers and related systems. The activity codes relating to each Level 3 sub-sector include:

- Biomass Furnace Systems, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Biomass Energy Systems, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Biomass Boilers and Related Systems, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance

Heat Pumps sub-sector includes Air, Ground and Water Sources Heat Pumps. The activity codes relating to each Level 3 sub-sector include:

- Air Source Heat Pumps, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Ground Source Heat Pumps, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Water Source Heat Pumps, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance

Geothermal sub-sector includes both horizontal and vertical systems. The activity codes relating to each Level 3 sub-sector include:

- Horizontal Systems, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Vertical Systems, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance

Heat Networks (Domestic Assets Only) sub-sector includes both external and internal physical assets present on the property, it excludes the wider Heat Network. The activity codes relating to each Level 3 sub-sector include:

- External Physical Assets, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Internal Physical Assets, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance

Hydrogen sub-sector includes fuels cells, cooking appliances and boilers. The activity codes relating to each Level 3 sub-sector include:

- Hydrogen Fuel Cells, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance

- Hydrogen Cooking Appliances, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Hydrogen Boilers, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance

Photovoltaic sub-sector includes both Photovoltaic PV and Solar Thermal. The activity codes relating to each Level 3 sub-sector include:

- Photovoltaic PV, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Solar Thermal, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance

Wind sub-sector includes domestic small wind turbines. The activity codes relating to the Level 3 sub-sector include:

- Domestic Small Wind Turbines, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance

Electric Vehicle Charge Point sub-sector includes both on-road and off-road Solutions. The activity codes relating to each Level 3 sub-sector include:

- On-road Solutions, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Off-road Solutions, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance

Combination Systems sub-sector entail projects where two or more of the above technologies are combined. The activity codes relating to each Level 3 sub-sector include:

- Combination Systems Design includes only the Advisory activity code
- Combination Systems Installation includes only the Installation activity code

Energy Efficiency Measures

Energy Saving Lighting sub-sector includes all energy saving lighting. The activity codes relating to the Level 3 sub-sector include:

- Energy Saving Lighting Equipment, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance

Energy Management sub-sector includes Home Automation, Smart Heating Controls, Home Energy Systems Integration and Energy Management Systems. The activity codes relating to each Level 3 sub-sector include:

- Home Automation, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Smart Heating Controls, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance

- Home Energy Systems Integration, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Energy Management Systems, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance

Ventilation & Air-tightness sub-sector includes Ventilation and Heat Recovery Systems, Energy efficient windows and doors and insulation for walls, roof/lofts and floors and roofing. The activity codes relating to each Level 3 sub-sector include:

- Ventilation and Heat Recovery Systems, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Energy Efficient Windows, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Insulated Doors, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- External Cavity Wall Insulation, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- External Wall Insulating Cladding, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Internal Wall Insulation, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Park Home Insulation, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Roof/Loft Insulation, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Floor Insulation, split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Heating System Insulation (ducting/pipework/cylinders), split by services related to: R&D, Product Design, Manufacture, Advisory, Sales, Installation and Maintenance
- Roofing, split by services related to: Manufacture, Advisory, Sales, Installation and Maintenance

Making Good After Works

Cleaning Services sub-sector includes Contract Cleaning. The activity code relating to this Level 3 sub-sector include:

- Contract Cleaning includes only the Service Activity Code

Walls & Ceilings sub-sector includes plastering and plaster boarding, painting and decorating. The activity codes relating to each Level 3 sub-sector include:

- Plastering and plaster boarding, split by services related to: Manufacture, Advisory, Installation
- Painting and Decorating, split by services related to: Manufacture, Advisory, Installation

Floors sub-sector includes both hard flooring and carpet fitting. The activity codes relating to each Level 3 sub-sector include:

- Hard Flooring, split by services related to: Manufacture, Advisory, Installation
- Carpet Fitting, split by services related to: Manufacture, Advisory, Installation

Advisory & Related Services

Consumer Advisory Services sub-sector includes Funding Advice, After Sales Support and Energy Tariff Advice. The activity code relating to the Level 3 sub-sector are:

- Funding Advice includes only the Advisory Activity Code
- After Sales Support, includes only the Advisory Activity Code
- Energy Tariff Advice includes only the Advisory Activity Code

Technical Services sub-sector includes a range of services such as specification, project planning, architectural services, environmental consultancy, monitoring and evaluation, building surveys and planning application services. The activity code relating to the Level 3 sub-sector are:

- Specification includes only the Professional Services Activity Code
- Technical Advice includes only the Professional Services Activity Code
- Project Planning (Strategy/Approach) includes only the Professional Services Activity Code
- Architectural Services includes only the Professional Services Activity Code
- Environmental Consultancy includes only the Advisory Activity Code
- Monitoring and Evaluation includes only the Professional Services Activity Code
- Building Surveys includes only the Professional Services Activity Code
- Planning Application Services (Listed Buildings etc.) includes only the Professional Services Activity Code
- Retrofit Coordination includes only the Professional Services Activity Code

Information Dissemination sub-sector includes Societal Engagement Campaigns, Newscasting and Industry-oriented Publications. The activity code relating to the Level 3 sub-sector are:

- Societal Engagement Campaigns (e.g., info boards) includes only the Information Activity Code
- Newscasting (early-stage project engagement activities) includes only the Information Activity Code
- Industry-oriented Publication includes only the Information Activity Code

Sector Development sub-sector includes Societal Behaviour Studies and activities related to Business Model Development, Business Support & Development and Sales Strategy Training. The activity code relating to the Level 3 sub-sector are:

- Societal Behaviour Studies includes only the Information Activity Code
- Business Model Development includes only the Information Activity Code
- Business Support & Development includes only the Information Activity Code
- Sales Strategy Training includes only the Information Activity Code

Appendix 2

The kMatrix Methodology

Introduction

This sector is part of the wider LCEGS sector, which (until 2015) has not been well documented by government statistics, so the methodology works beyond standard industrial and market classifications and looks for multiple sources of industrial-based evidence to quantify market values. kMatrix is unique in how it identifies, assembles, evaluates, monitors and develops rules for the use of those sources to quantify 'difficult-to-measure' markets.

Market activities are only included when there are multiple data sources. These sources are screened to remove duplicate references to any single source and then shortlisted by removing outliers and unreliable sources. This shortlist is then screened again until some consistency in value is achieved.

Market values created in this way are then "reality tested" by comparing these values within and across sectors, against known national/regional industrial specialism, across nations, against known trade flows and recognised industry benchmarks.

This methodology is quantitative and data intensive. Its uniqueness resides in the ability to manage and select reliable sources that are specific to each market activity. The data sources are global in nature and derive from government, private sector, institutional, industrial, trade, advertising, HR, financial, investor, academic and other (unpublished) sources. Over 11,200 sources were used to compile the data set for this study.

Sources are carefully managed. kMatrix measure and rate their sources' accuracy and reliability over time and exclude sources that are outdated or without a measurable track record. They use no less than seven qualified sources showing some consistency in results for deriving any values that they print. They create a mean value from these selected values and then assign a confidence level (generally of about 85%) based upon the spread of selected values around the mean

In contrast to most research or consulting reports kMatrix do not identify, copy and then acknowledge single data sources for specific tables or analytical comments. This is impossible for them to do because they multi-source every aspect of their data and then "transform" it into a new value. This makes single source attribution meaningless.

Measures

Throughout this dataset the focus is on a small number of key measures. To summarise, these are:

- **Sales:** This is the estimate (in £m) of economic activity by identified companies in a defined region within the supply/value chain for market products and services. The estimate is based upon where sales activity takes place rather than where it is reported
- **Companies:** This is a measure of the total number of companies in a defined region that match, or fit within, the market activity headings
- **Employment:** This is a measure of the estimated employment numbers across all aspects of the supply/value chain. National, regional and other economic data sources have been used to estimate current employment levels for each area of market activity

- **Growth:** This is a multi-year measure that includes historical AND forecast growth. The growth measure is derived from live, rapidly changing and multi-sourced data links and is specifically based upon growth in Sales. Growth is generally a measure of increased market opportunity and can be used for trend analysis, comparison across different markets or as a moving indicator of market confidence (growth time series)
- **Exports:** This is a measure of products and services sold overseas and is calculated using in-country/out-of-country data and additional data from the logistics and freight forwarding industry

The kMatrix Methodology

The methodology for sector analysis is definition and source-driven. The definition determines WHAT gets measured and the source model determines HOW it gets measured.

All of the data measures are multi-sourced, and the process starts by defining the financial value of the sector (based upon our inclusive definition) from a wide variety of sources.

When kMatrix create a sector definition they always check that multiple sources of economic data exist for each included activity. This financial value is checked against existing sector values and also against the value of other economic sectors.

This is an iterative process that continues until they arrive at robust values and comparisons for all activities within the sector (comparative values of Wind vs. Photovoltaic vs. Biomass) that can then be meaningfully compared across global economies (UK vs. US vs. China etc.) and across different sectors (environmental consultancy vs. other specialist consulting activities). It is important that the methodology triangulates economic values in this way so that they:

- a) Can exclude the research bias that often occurs from focusing on a single sector in a single country and
- b) Ensure that they are effectively monitoring a sector that is still evolving by absorbing activities often included in other sectors.

Sales

The key measure that is used for financial value is Sales i.e., the value of sector products and services sold either to other businesses or directly to consumers from the geographically located company base, whether it be national, regional, sub-regional or Local Authority. This means that the analysis only includes activities where there is a measurable economic footprint. It does not include publicly-funded research or pre-commercial consumption of funds, except where those activities result in the purchase of product and services from third parties.

As they derive the financial value for the sector they also assemble and assess the UK company base that is contributing to this value. In the first case they identify all “significant” or “specialist” companies, these are companies where LCEGS account for over 80% of company sales, and then the supply/value chain companies where LCEGS sales is an important and measurable component of their overall sales - (over 20%). These percentages are indicative and vary for different LCEGS activities.

Companies

The company count acts as a further reality check on the financial value of the sector by comparing company turnover values in this and other sectors and also assists in the geographical analysis of

where LCEGS value is created. For company counts and company listings we use standard data sources (FAME, Companies House etc), international sources, industry/trade sources, the advertising industry (YELL etc.) and, with caution, company-published information.

One important fact about the methodology is that in a typical SIC approach to sector analysis, a company is counted once and the value of its activities are very often assigned to a single category (which may or may not reflect what a company actually sells now), within a single sector and from a single geographical location.

This approach is to identify and assign value to different activities within a company that may fall within the same sector and to exclude values associated with different sectors. Where possible, they also break the reported activity down within larger multi-site companies so that only the value created within a region/LA is reported for that region/LA.

By analysing a sector in this way, they are able to capture the economic value generated by all “specialist” and supply/value chain companies, without any double counting of value. However, the methodology does mean that a single company may contribute value to multiple activities, and we have to be careful not to double-count companies. To avoid this we assign a company, for counting purposes, to the activity that accounts for most of its sector sales. This does mean that on some occasions some of the smaller activities in our analysis may have a financial value in the sales column but a zero in the company column.

Employment

When financial values and company numbers have been calculated the methodology then looks at the employment base for the sector. The analysis of employment includes HR/Recruitment industry data, trade/industry data, government statistics, company reported employment levels and a variety of industry benchmarks that show employee input ratios into different products and processes. They do not survey companies directly for this information.

From these different sources we calculate employment numbers for LCEGS sector activities, taking into account how staff can operate processes that produce products for different markets. We, therefore, measure our employment numbers in Whole Time Equivalents (WTE).

Growth

Sales Growth is both an historical and a forecast measure and the methodology applies the same multi-source rigour to assessing growth that has already occurred as to growth that may occur. Growth forecasting shows the importance of both multi sourcing AND tracking the historical reliability/accuracy of sources used. It is based upon continuous monitoring of forecast “opinions” that are constantly being updated and re-evaluated, as a result “in-year” measurements of predicted growth can vary depending on when the sample is taken and change as sources respond to events like recession.

For this reason, we measure annual growth as a) a value frozen at a point in time and b) a time series (monthly or quarterly) measured throughout the year. In this file we include only the single (frozen) forecast. Separate files with detailed time series forecasts and trend analysis for the LCEGS sector are available.

Annual growth figures are useful in calculating and comparing the future contribution of sector activities beyond the current baseline. The percentage growth shows the RATE of change, the application of growth rates to the current sales baseline shows the IMPACT of change. Measuring the impact of change in financial terms shows how the ranking and importance of existing activities

to the region/local authority may change over time and suggests when and where action may need to be taken to accommodate changes in the employment and company base.

Geography

The methodology is designed to locate and measure economic activity at various geographical levels. The smallest unit of measurement is the Local Authority, but it can analyse data at county, sub-regional, LEP, regional and UK level.

When the methodology calculates and measures economic activity at the local authority level it takes into account existing local government boundaries, local GDP calculations and demographics, the postcode location of companies in the sector and any other local data that is available and relevant to the sector. When we measure sales and employment, therefore, our numbers are based upon where the business is located, rather than where people live.

There are some limits to what economic measures can be meaningfully or accurately applied at the local level. This is due to the range and specificity of data sources. Most of the economic development measures within this dataset can be accurately represented at a local level. Growth is an exception because rates cannot meaningfully be differentiated at a local level, therefore we apply regional growth rates throughout.

Appendix 3

LCEGS and Office of National Statistics Environmental Goods and Services Sector Comparison – how kMatrix differs

The purpose of this appendix is to provide a brief description of some of the differences between the Office of National Statistics (ONS) Environmental Goods and Services Sector (EGSS) data and the LCEGS data provided by kMatrix. The two methodologies differ in the way data is collected, their methodologies, and in terms of their sector definitions.

kMatrix is a data house that specialises in providing evidential data for business modelling and analysis on a multi-sectoral basis. We provide back-room services to the likes of Deloitte and PWC amongst others in the UK, New Zealand, Australia, US and the EU for sectoral analysis and due diligence for sectoral development and investment. We also provide our business and technology profiling services through these channels to market, as well as direct to universities for technology spinouts and individual businesses for development purposes. Further customers include government departments such as BEIS, Home Office and various local and regional government departments.

The ONS EGSS data is produced primarily for the purpose of national accounting. It is sector-specific, using narrow sector definitions and takes no account of the value or supply chains in a sector. In contrast, the kMatrix methodology was originally designed to help companies by measuring technologies or activities using small taxonomies, to assist with investment and developmental planning. This capability was expanded to provide market data for a number of economic sectors, by creating larger taxonomies to capture as much of the market as possible, including the supply and value chains. Each taxonomy for a sector will draw relevant activities from many other sectors, to fully capture all activity. In this way, the LCEGS taxonomy captures activities across multiple sectors and down the value and supply chains. This difference in *what* is being measured is the fundamental reason why the definitions used by ONS and LCEGS do not align.

The kMatrix methodology uses a unique process of ‘triangulation’ to measure metrics such as employment and other characteristics of a sector at varying levels of detail. This process has been developed over 30 years and has been adopted by various governments, universities, and major corporates to provide economic industry data for hard to measure sectors. It is similar in concept to the triangulation of satellites to work GPS satellite navigation systems. The methodology uses multiple data points which can be economic or non-economic in origin, from a number of different sources to ‘triangulate’ the value of a product or service in question.

This process is different to the methodology used by the ONS to produce the EGSS data, predominantly because the ONS data relies on self-certification of companies into SIC codes, whereas the kMatrix methodology calculates values based on multiple sources of data. The ONS data is based on where companies choose to classify themselves. kMatrix data looks at the activities of companies and attributes those activities to different sub-sectors. In effect, the ONS system is limited to the ability or willingness of companies to list which sectors their products or services are used in, this method is likely to produce both over and underestimates of market size as companies will attribute more or less of their activities to relevant SIC codes. The kMatrix methodology does not rely on company cooperation but looks at their activities and breaks them down into the levels or sub-sectors they are relevant to.

The kMatrix process operates on a ‘bottom up’ basis, meaning we look at products and services delivered, rather than company classifications and turnover, which is classed as ‘top down’ (SIC system). The bottom-up process was developed to assist individual companies based on sectoral analysis findings and provide evidential data and advice. By looking at the sector from the bottom up

(by each activity, product, or service), the sector can be determined in accordance with the relevant sector definition, whilst allowing the flexibility to ‘add in’ or ‘opt out’ of various activities depending on the purpose of the reporting. ONS data itself is not used to produce kMatrix figures, but the kMatrix values can be reported out through the ONS classification system if required.

Table 1 shows a comparison between employment analysis for the London region using the SIC classification methodology and the kMatrix methodology for the Manufacturing sector and the Construction sector.

Table 1: Comparison of 2011 - 2016 Employment Data for SIC and kMatrix in London.

Methodology	Sector	2011 Jobs	2012 Jobs	2013 Jobs	2014 Jobs	2015 Jobs	2016 Jobs
SIC based	Manufacturing	106,750	108,250	106,750	112,000	108,000	105,250
SIC based	Construction	133,250	150,500	146,500	146,250	145,250	155,750
kMatrix	Manufacturing	137,351	135,943	138,951	141,873	140,308	131,230
kMatrix	Construction	166,629	195,334	177,915	184,022	184,317	199,038
Indexed numbers for the rows above show that growth in the manufacturing and construction sectors is similar for both the SIC and kMatrix definitions							
		100	101.4	100.0	104.9	101.2	98.6
		100	112.9	109.9	109.8	109.0	116.9
		100	99.0	101.2	103.3	102.2	95.5
		100	117.2	106.8	110.4	110.6	119.4

Sector: LCEGS is made up of elements from many different traditional sectors (including manufacturing, finance, construction, consulting, and energy) therefore as a grouping it includes products and services from those sectors that together amount to the total value of the LCEGS grouping.

Scale: The ONS system only produces estimates of the sector size at the country level, whereas the LCEGS data can be provided by Country, Region, City, Local Authority etc.