# London Green Jobs and Skills

## South London final report summary

Prepared by WPI Economics on behalf of South London Partnership

PRIVATE & CONFIDENTIAL

# Contents



This is a summary of the report ***London Green Jobs and Skills*** carried out by WPI Economics and the Institute for Employment Studies for South London. The full report, including all sources and reference for the information in this slidepack, can be found at: http://wpieconomics.com/publications/green-jobs-and-skills-in-london-cross-london-report

# Key findings

Green jobs today in South London

- The term "green job" is directly related to policies aiming to deliver environmental goals, so we define ***green jobs as those jobs that facilitate meeting net zero and broader environmental goals.***
- We estimate there were some **19,200 green jobs** in South London in 2020, **4.2% of total employment.** This represents just over 1 in 7 green jobs in the capital.
- The most prominent green sectors in South London, in line with the wider picture across the capital, **are Power and Homes and Buildings**, accounting for almost **3 in 4 of the subregion's green jobs**. Despite its relatively small size, representing 5.2% of green jobs in the sub-region, **Climate adaptation, green infrastructure and reducing localised pollution** is the green sector whose employment is most concentrated in South London, which hosts **almost 1 in 5 of all London jobs in this industry**.
- Workers in green jobs in South London **are predominantly in higher level managerial, professional and associate professional occupations** (61%), a proportion which is higher than the UK average for green workers (53%), but below the South London subregion's wider economy (70%). There is **variation by sector**, with jobs in power and green finance/consultancy sectors being predominantly professional and associate professional, while the largest group in sectors related to homes, buildings and infrastructure, and reduce, reuse, recycle is skilled craft workers.
- There are higher than average proportions of male workers, and white workers, in green jobs compared with all jobs in South London. Furthermore, the green workforce has an older than average age profile, in comparison with all workers in South London.

# Key findings

Green skills today in South London

- More than **half** (54%) of South London residents in green jobs **have degrees** (above the proportion of graduates in all jobs in South London of 52% and the proportion of graduates in green jobs across the UK as a whole of 38%), with **significant sectoral variation** (ranging from above three quarters in power, consultancy and finance to one quarter in homes and building and reuse, reduce and recycle sectors).
- Analysis at the national level shows **that green business tend to draw relatively few workers straight from education** and rely more on workers from other sectors. In South London, the pool of workers likely to have green-related skills but working in other sectors is around four times as large as the number of green workers, although this potential supply is only twice as large as the workforce in the power and homes, buildings and infrastructure sectors.
- There are **around 6,000 learners in FE** (19+) **and in apprenticeships** (all ages) **in relevant subject areas to green jobs**. These represent nearly **30% of the current green workforce**, higher than the level across the whole of London (18%), indicating a relatively large education and training pipeline at FE level within South London.
- The HE institutions in South London produce a relatively large number of business/finance and maths/computing graduates in relation to the numbers of graduate workers in green jobs with degrees in these subjects, although much smaller numbers of graduates in engineering and physical/environmental sciences in relation to the size of the graduate workforce with these degrees in green jobs.

# Key findings

Projections of green jobs and skills in South London

- The total number of green jobs in the central scenario is projected to rise **from 19,000 in 2020 to 38,000 in 2030** – a doubling of the green economy workforce over a decade - **and 65,000 in 2050**, representing a **3-fold increase**. By 2050, **three sectors are projected to account for 3 in 4of South London's green jobs:** power (34%), homes and buildings (25%) and low carbon transport (16%).
- In addition to the jobs that will be created by the transition to net zero, there will be many jobs lost in carbon-intensive industries. We identify that in South London **40,000 are in carbon intensive industries** and therefore at highest risk of change, mostly in Construction and Land transport, representing a **similar percentage of the total workforce as the rest of the UK and London economies**.
- However, we estimate there will be a **small positive impact on overall employment in South London** due to the shift to net zero, with an **increase of around 3,900 jobs in 2030 and around 1,700 jobs in 2050**.
- Under the central scenario, **the fastest growth rate is projected for skilled craft workers** (118% increase to 2030), which is also projected to experience the largest increase in numbers of workers (5,600 increase). Under the high growth scenario, skilled craft workers would increase by 13,000, or 270%).
- In addition to the growth in numbers, there will be a need to replace workers who retire or leave the labour market. It is estimated that this replacement demand represents one third of the current employment level, with only minor variation across the occupational groups.
- These **projected total demands** for workers in green jobs in the central scenario **are large in relation to the outputs from FE and HE**. The annual increase in consultancy-based jobs represents around one seventh (17%) of the annual output from education and training, while the annual increase in craft-based jobs is almost as large (90%) as the total education and training output in craft-based subjects.

# Project goals and method

# Project goals

1. Develop a shared definition of green jobs to facilitate collaboration and joint working between London's sub-regional partnerships.
2. Understand demand for green jobs and skills to help member authorities shape employment and skills provision.
3. Develop a shared narrative on green jobs and skills, emphasising the sub-regional partnerships' collective commitment to de-carbonisation, to support their public affairs work.

# How the project was carried out

**Literature review:** Review of literature on the definition of green jobs and skills, how to quantify them and sources for projecting growth in green jobs over time

**Engagement with boroughs and stakeholders:** Extensive engagement with borough Skills Officers and Recovery Leads, range of external public and private stakeholders

**Data analysis:**

- Mapping of Low Carbon and Environment Goods and Services sector data to jobs in eleven key green policy areas
- Supervised machine learning to understand companies active in the green economy across sectors
- Analysis of Labour Force Survey data on current green skills and flows into and out of relevant occupations
- Analysis of Business Register and Employment Survey data for jobs at high risk from the transition, and the equalities implications

# Defining green jobs

# Existing definitions

We reviewed six potential approaches:

i. Environmental Goods and Services Sector (EGSS)

ii. Low Carbon and Renewable Economy survey (LCREE)

iii. Low Carbon and Environmental Goods and Services Sector (LCEGS)

iv. International Labor Organization (ILO) definition

v. Task based approach (American examples using O*Net data)

vi. Mission-based approach (Green Jobs Taskforce approach)

Through desk-research and stakeholder engagement we assessed the pros and cons against several criteria – see table overleaf. We concluded that there is no definition of the terms green jobs or the green economy that is divorced from policy goals – the terms exist because of the imperative to deliver on net zero and broader environmental goals.

We therefore recommended a practical "mission-based" definition:

***Green jobs are those jobs that facilitate meeting net zero and broader environmental goals.***

To decide which activity is likely to facilitate meeting net zero goals we follow the Committee on Climate Change's recommended pathways.

# Summary prioritisation table for definitional approaches

| Name | Definition | Government recognised definition? | | Comprehensibility & strength of relationship to political narrative | Feasibility | | Sector coverage | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Broader than net zero? | Up to date with modern economy | | In London context? |
| **Environmental Goods and Services Sector (EGSS)** | *Areas of the economy engaged in producing goods and services for environmental protection purposes, as well as those engaged in conserving and maintaining natural resources* | ✓✓✓ | National statistic | ✓ | ✓✓ | Would require ONS to provide data | ✓✓✓ | ✓ | Based on SIC codes | ✓ |
| **Low Carbon and Renewable Energy Economy estimates (LCREE)** | *Economic activities that deliver goods and services that are likely to help the UK generate lower emissions of greenhouse gases, predominantly carbon dioxide* | ✓✓✓ | National statistic | ✓✓ | ✓✓ | Would require ONS to provide data | X | ✓✓ | Survey updated annually but still misses areas due to SIC code limitations | ✓ |
| **Low Carbon and Environmental Goods and Services Sector (LCEGS)** | *EGSS sectors expanded to include activities that contribute and enable growth in the sector, including value and supply chains* | ✓✓ | GLA commissioned report | ✓✓ | ✓✓✓ | Requires data purchase | ✓✓✓ | ✓✓✓ | Approach updated regularly | ✓✓✓ |
| **Task-based approaches** | *Approaches typically from the United States that identify green tasks, and then the proportion of each job type that is spent on green tasks* | X | Current applications US based | ✓✓✓ | X | Timescale too short | ✓✓✓ | ✓✓✓ | Depending on approach | ✓✓✓ |
| **International Labor Organization** | *Jobs which reduce the consumption of energy and raw materials, limit greenhouse gas emissions, minimize waste and pollution, protect and restore ecosystems and enable enterprises and communities to adapt to climate change. In addition, green jobs have to be decent.* | ✓ | Internationally recognised | ✓✓ | X | Not operationalised | N/A | N/A | | N/A |
| **Mission-based definition following Green Jobs Taskforce** | *Employment in an activity that directly contributes to - or indirectly supports - the achievement of the UK's net zero emissions target and other environmental goals, such as nature restoration and mitigation against climate risks. 7 specific policy areas identified* | ✓✓ | National Government commissioned report | ✓✓✓ | ✓✓✓<br>✓✓ | With modern methods<br>With publicly available data | ✓✓✓ | ✓✓✓ | Can use modern methods | ✓✓ |
| **Mission-based definition: tailored to London context** | *Same as above but tailored to London context - suggested 11 areas including Green Finance, Environmental R&D and Reducing Localised Pollution (air, water and noise)* | ✓ | Adapting a government recognised approach | ✓✓✓ | ✓✓✓<br>✓✓ | With modern methods<br>With publicly available data | ✓✓✓ | ✓✓✓ | Can use modern methods | ✓✓✓ |

# Mission-based definition: sectors for a London based definition

To develop a mission-based definition for London we reviewed three key sources:

- The sectors used by the Green Jobs Taskforce (2020/2021)
- The London Councils and London Environment Director's Network Joint Statement on Climate Change
- The Mayor of London's London Environment Strategy (2018)

Combining these three sources we proposed 11 policy areas that reflect both net zero and broader environmental policy goals, shown overleaf. Although for this analysis it is useful to split these areas, it is important to stress that environmental policy crosses these boundaries – in particular, broader environmental goals and contribute to net zero and vice versa.

# Mission-based definition: sectors for a London based definition

Net zero focus

1. **Homes and buildings:** Including retrofit, building new energy-efficient homes, heat pumps, smart devices and controls, heat networks and hydrogen boilers.
2. **Low carbon transport:** Including low or zero emission vehicles, aviation and maritime, rail, public transport and walking or cycling.
3. **Power:** Including renewables (such as wind, solar and hydropower), nuclear power, grid infrastructure, energy storage and smart systems technology.
4. **Industrial decarbonisation, hydrogen and carbon capture and storage**: Including hydrogen production and industrial use, carbon capture, utilisation & storage (CCUS) and industrial decarbonisation.
5. **Green Finance:** The concentration of financial activity in Central London means that in our context Green Finance could be a key area to identify separately.
6. **Climate change research & development:** Including private sector, academic and public research.
7. **Climate change strategy, policy, monitoring and planning:** Including public, private and NGO sector strategy and policy, outreach to citizens, environmental monitoring and use of planning system to achieve net zero.
8. **Climate adaptation:** Including flood defences, retrofitting of buildings to be resilient to extreme climate events, nature-based solutions to reduce climate impacts and civil and mechanical engineering for infrastructure adaptation.

Broader environmental goals (may have some impact on climate change goals)

1. **Reducing localised pollution:** Including air pollution, water pollution and noise; London has ambitious goals across all three of these areas.
2. **Reduce, reuse, recycle:** Including waste management and circular economy.
3. **Green infrastructure:** Within a London context this will focus on urban green infrastructure, and include activity aimed at increasing biodiversity directly or through offsetting.

# Green jobs and skills in South London: now

# Quantifying green jobs - sources

To quantify the gross number of jobs in London in the eleven green sectors we use two sources:

**1) The Low Carbon Environmental Goods and Services (LCEGS) sector dataset**

This dataset is prepared by the consultancy kMatrix and commissioned regularly for London by the Greater London Authority, and includes a broader set of activities than official definitions such as the ONS EGSS and LCREE data. However, we could not map our Climate Adaptation and Green and Blue infrastructure sectors sufficiently well so used the Data City tool discussed below. To allocate the jobs identified within LCEGS to our sectors these results we:

- Mapped data from the 2017/18 LCEGS dataset to our green jobs categories
- Estimated 2020 job figures using UK growth rates from the most recent LCEGS estimates. London figures for the period 2018/19 to 2020/21 have not been published yet, so we have currently assumed that growth for London has been in line with UK growth rates.

**2) The Data City Real-Time Industrial Classification tool**

This guided machine learning tool allows us find companies working within specific fields, based on the way companies actually describe themselves on their websites. We worked with the Data City team to provide an initial "training set" of companies and keywords, and then iteratively improve the results by guiding the machine learning algorithm on which companies should be excluded or included. This tool allows us to identify data for the two sectors that the LCEGS data does not and identify a broad range of companies within each sector that are operating within London. As it is a tool ultimately geared towards finding companies, it is limited in its ability identify green jobs within firms that are not fully within our definition of the green economy.

# Estimated green jobs in South London, 2020

- Using these two sources, gives us these estimates of green jobs in South London in 2020:

| Sector | Numbers of jobs | South London % of total employment | % of green jobs |
|---|---|---|---|
| Climate adaptation, green infrastructure and reducing localised pollution | 1,000 | 0.2 % | 5.2% |
| Climate change Research and Development | 480 | 0.1% | 2.5% |
| Climate change strategy, policy, monitoring and planning | 410 | 0.1% | 2.1% |
| Green finance | 100 | 0.0% | 0.5% |
| Homes and Buildings | 6,200 | 1.3% | 32.3% |
| Industrial decarbonisation, hydrogen and carbon capture | 110 | 0.0% | 0.6% |
| Low Carbon Transport | 1,100 | 0.2% | 5.7% |
| Power | 7,900 | 1.7% | 41.1% |
| Reduce, reuse, recycle | 1,900 | 0.4% | 9.9% |
| **Total** | **19,200** | **4.2%** | **100.0%** |

*Source: WPI Economics calculations based on data supplied by kMatrix on their Low Carbon Environmental Goods and Services methodology and The Data City, and ONS Business Register and Employment Survey for total employment*

# Estimated green jobs in South London

*Total estimated green jobs by borough, 2020*

*Note: Analysis relates to the location of the job, not the location of the worker*

| | Climate adaptation, green infrastructure and reducing localised pollution | Climate change Research and Development | Climate change strategy, policy, monitoring and planning | Green finance | Homes and Buildings | Industrial decarbonisation, hydrogen and CCUS | Low Carbon Transport | Power | Reduce, reuse, recycle | All Green Jobs |
|---|---|---|---|---|---|---|---|---|---|---|
| **Croydon** | 50 | 90 | 70 | <50 | 1,080 | <50 | 350 | 1,590 | 360 | 3,600 |
| **Kingston upon Thames** | <50 | 70 | 50 | <50 | 810 | <50 | 200 | 1,220 | 240 | 2,700 |
| **Merton** | <50 | 60 | 50 | <50 | 750 | <50 | 170 | 1,030 | 260 | 2,400 |
| **Richmond upon Thames** | 650 | 140 | 140 | <50 | 2,210 | <50 | 190 | 2,280 | 440 | 6,100 |
| **Sutton** | 70 | 130 | 100 | 60 | 1,370 | <50 | 160 | 1,770 | 620 | 4,300 |

Note that this borough-level data represents 2017 data uprated by UK growth rate of green jobs to 2020, so will not reflect areas that may have seen growth out of line with national averages due to e.g. the establishment of a large South green employer since 2017. 2020/21 data is expected to be available shortly. As with any data analysis, there is a confidence level around the accuracy of the data. Much of our underlying data is supplied by kMatrix, who monitor the confidence level through a rigorous source selection process. Confidence levels vary by activity, geography and by forecast year. All borough level employment data has a confidence level of over 80%

*Source: WPI Economics calculations based on data supplied by kMatrix on their Low Carbon Environmental Goods and Services methodology and The Data City, and ONS Business Register and Employment Survey for total employment by borough.*

# Estimated green jobs in South London

*Estimated green jobs as a proportion of total employment by London borough, 2020*

*Note: Analysis relates to the location of the job, not the location of the worker*

| | Climate adaptation, green infrastructure and reducing localised pollution | Climate change Research and Development | Climate change strategy, policy, monitoring and planning | Green finance | Homes and Buildings | Industrial decarbonisation, hydrogen and CCUS | Low Carbon Transport | Power | Reduce, reuse, recycle | All Green Jobs |
|---|---|---|---|---|---|---|---|---|---|---|
| **Croydon** | 0.0% | 0.1% | 0.1% | - | 0.8% | - | 0.3% | 1.2% | 0.3% | 2.8% |
| **Kingston upon Thames** | - | 0.1% | 0.1% | - | 0.9% | - | 0.2% | 1.4% | 0.3% | 3.0% |
| **Merton** | - | 0.1% | 0.1% | - | 0.9% | - | 0.2% | 1.2% | 0.3% | 2.8% |
| **Richmond upon Thames** | 0.8% | 0.2% | 0.2% | - | 2.6% | - | 0.2% | 2.7% | 0.5% | 7.3% |
| **Sutton** | 0.1% | 0.2% | 0.1% | 0.1% | 1.9% | - | 0.2% | 2.4% | 0.8% | 5.8% |

Note that this borough-level data represents 2017 data uprated by UK growth rate of green jobs to 2020, so will not reflect areas that may have seen growth out of line with national averages due to e.g. the establishment of a large South green employer since 2017. 2020/21 data is expected to be available shortly. As with any data analysis, there is a confidence level around the accuracy of the data. Much of our underlying data is supplied by kMatrix, who monitor the confidence level through a rigorous source selection process. Confidence levels vary by activity, geography and by forecast year. All borough level employment data has a confidence level of over 80%

*Source: WPI Economics calculations based on data supplied by kMatrix on their Low Carbon Environmental Goods and Services methodology and The Data City, and ONS Business Register and Employment Survey for total employment by borough.*

# Understanding green skills in London

Best place to start in understanding skills needed for green jobs, is to consider the skills of those currently in green jobs.

We have used Labour Force Survey data to understand the skills and demographic characteristics of those working in green jobs, through identifying the most common SIC codes within each sector.

The table shows the three most common sector classes (4-digit SIC) within each of our sectors. This illustrates both:

- a good matching (e.g. electrical installation in Low Carbon Transport, or plumbing in Homes and Buildings),
- but also a shortcoming of SIC codes in that many green companies fall into 'other activities not elsewhere classified.

The skills analysis has combined these sectors into four broader ones:

- Power
- Homes, buildings and infrastructure (including transport, industry and localised pollution)
- Reduce, reuse, recycle
- Consultancy/finance (including climate adaptation and strategy)

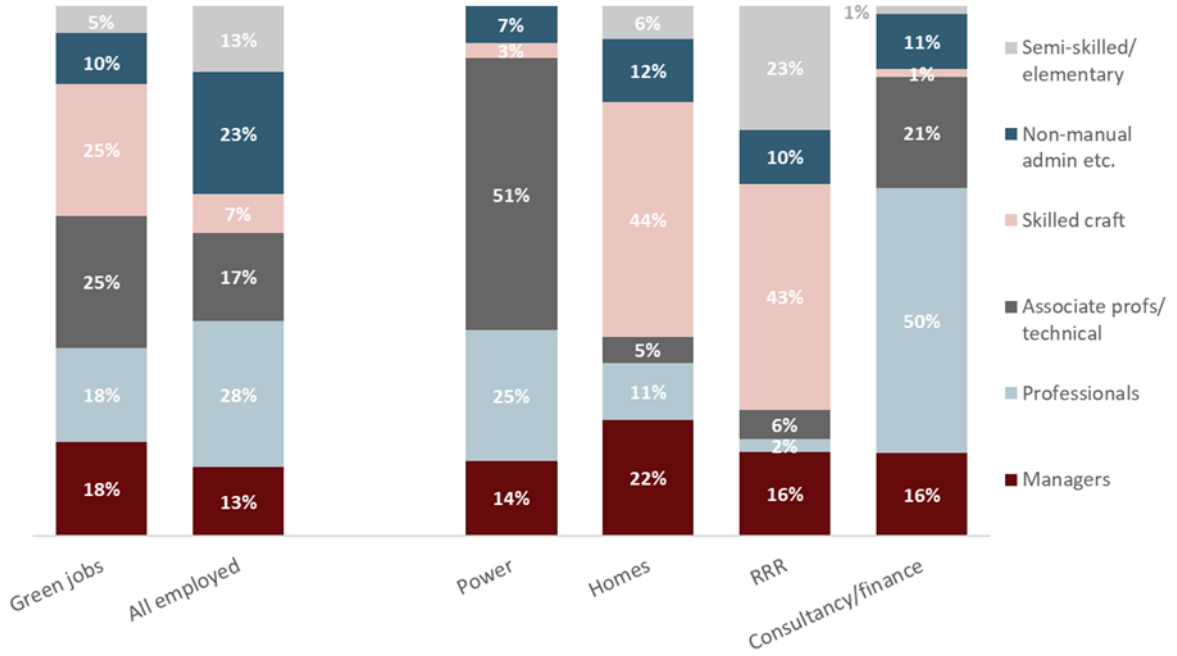
| Climate adaptation | |
|---|---|
| Environmental consulting activities | 21 |
| Engineering related scientific and technical consulting | 11 |
| Management consultancy activities other than financial | 11 |
| **Green and blue infrastructure** | |
| Other business support service activities n.e.c. | 11 |
| Landscape service activities | 8 |
| Environmental consulting activities | 8 |
| **Low Carbon Transport** | |
| Electrical installation | 29 |
| Retail sale via mail order houses or via Internet | 19 |
| Other business support service activities n.e.c. | 12 |
| **Reducing localised pollution** | |
| Environmental consulting activities | 37 |
| Other professional, scientific and technical activities n.e.c. | 25 |
| Engineering related scientific and technical consulting | 16 |

| Climate change strategy, research & monitoring | |
|---|---|
| Environmental consulting activities | 75 |
| Management consultancy activities other than financial | 59 |
| Other business support service activities n.e.c. | 38 |
| **Homes and Buildings** | |
| Plumbing, heat and air-conditioning installation | 59 |
| Other business support service activities n.e.c. | 27 |
| Electrical installation | 16 |
| **Power** | |
| Production of electricity | 409 |
| Other business support service activities n.e.c. | 140 |
| Management consultancy activities other than financial | 82 |

| Green Finance | |
|---|---|
| Management consultancy activities other than financial | 20 |
| Other business support service activities n.e.c. | 14 |
| Financial intermediation not elsewhere classified | 12 |
| **Industrial decarbonisation, hydrogen and CCUS** | |
| Engineering related scientific and technical consulting | 11 |
| Other business support service activities n.e.c. | 8 |
| Management consultancy activities other than financial | 8 |
| **Reduce, re-use and recycle** | |
| Collection of non-hazardous waste | 34 |
| Recovery of sorted materials | 31 |
| Treatment and disposal of non-hazardous waste | 30 |

# Occupational patterns of employment

- Managerial and associate professional jobs are over-represented in green sectors, although the proportion of professional occupations in green sectors is below the overall proportion.
- There are more than three times as many skilled craft jobs in green sectors compared with all sectors (25% and 7% respectively)
- Professional, technical and managerial occupations are most prominent in the Power and Consultancy/Finance sector, whereas skilled craft workers are the largest occupational group in the Homes an reduce, reuse and recycle sector.




The detailed occupations reflect the main activities within each sector, for example:

- Electricians, gardeners and plumbers in homes, buildings and landscape
- Management consultants and other finance, sales and marketing professionals and managers in consultancy/finance

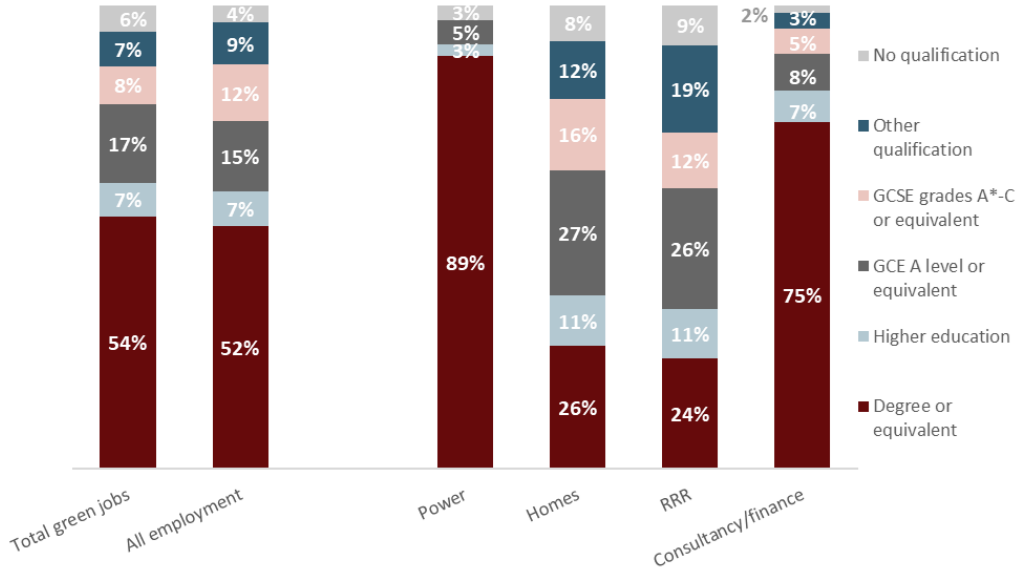
*Source: Quarterly Labour Force Survey, Jan-Mar 2020 to Oct-Dec 2020 combined*

# Demographics and qualifications of the workforce

- The green workforce is male dominated, with a lower proportion of workers from Black, Asian and Minority Ethnic backgrounds in comparison with all sectors in South London.
- The proportion of workers from Black, Asian and Minority Ethnic backgrounds is highest in the consultancy and finance sector (40%), followed by reduce, reuse, recycle sector (32%), and lowest in the power sector (6%).

| | All green jobs | All jobs | Power | Homes | Reduce, re-use and recycle | Consultancy/ finance |
|---|---|---|---|---|---|---|
| Male | 77% | 53% | 77% | 81% | 76% | 57% |
| Female | 23% | 47% | 23% | 19% | 24% | 43% |
| | | | | | | |
| White | 81% | 62% | 94% | 74% | 68% | 60% |
| Black, Asian and Minority Ethnic | 19% | 38% | 6% | 26% | 32% | 40% |

*Source: Quarterly Labour Force Survey, Jan-Mar 2020 to Oct-Dec 2020 combined*




- The green workforce is highly qualified, and more than half have first degrees or equivalent or higher qualifications (more than three quarters in power, and consultancy/finance).
- Engineering graduates, those with physical/environmental science degrees, and those with business/finance degrees are over-represented.
- Among those with vocational qualifications, building and civil engineering, and electricity and energy are the most common subject areas.

*Source: Quarterly Labour Force Survey, Jan-Mar 2020 to Oct-Dec 2020 combined*

# Skills supply considerations

## Green sectors tend to draw staff from other sectors, rather than straight from education

- around 1% of the workforce enter straight from full-time education each year, compared with 3% across all sectors;
- entrants from other sectors to green sectors make up 6% of the current workforce each year;
- manufacturing sectors are a key source of labour and skills.

## There is a substantial pool of relevant skills in other sectors

- The number of workers in key occupations related to green sectors but working in non-green sectors is more than four times as large as the current green workforce.
- This additional 'pool' is largest for consultancy/finance, and smallest for power and homes, buildings and landscape.

## Provision in the FE sector

- Just over 3,000 learners in relevant courses in FE, remaining stable in recent years.
- Similarly, 2,700 apprenticeship starts in relevant sector subject areas - mostly in business apprenticeships rather than craft apprenticeships.
- More than 900 apprenticeship achievements in qualifications associated with green jobs.
- Learners in FE/apprenticeships are 30% of the size of the workforce, above London-wide averages.

## Provision in the HE sector

- One tenth of all HE students in London (c. 250,000) study in South London universities.
- The number of business/finance graduates each year is nearly three quarters of the green workforce with degrees in these subject areas.
- However, new engineering graduates represent one quarter of the number of employed in green sectors.
- And new graduates in physical/environmental sciences represent under just 12% of the graduate workforce.

# Green jobs and skills in South London: the future

# Projections for growth in jobs

- We reviewed a wide range of UK based and international literature to gather sources for anticipated growth rates in green employment in each of the policy areas. Where available we have used London specific data
- Key sources include:
  - CCC (2017): UK business opportunities of moving to a low carbon economy
  - LGA / Ecuity (2020): South green jobs - accelerating a sustainable economic recovery
  - Building the net zero energy workforce (National Grid)
  - Net Zero Housing workforce / London Councils Pathways Report (Parity Projects)
  - ILO (2020) The employment impact of climate change adaptation
  - Vivid Economics and Barton Willmore (2020) Levelling Up and Building Back Better Through Urban Green Infrastructure: An Investment Options Appraisal
  - Green Alliance / Wrap (2015) Opportunities to tackle Britain's labour market challenges through growth in the circular economy
- We constructed a central scenario on the basis of the apparently most likely outcomes, and a low and high scenario that represent issues such as:
  - **Low:** More likely outcome if there are green skills shortages, lower uptake rates of green technology and / or less effective policy
  - **High:** Possible outcome if London captures a greater share of exportable green services and makes fast progress towards the 2030 net zero target that allows London green industry to capture more of the market both in London and outside

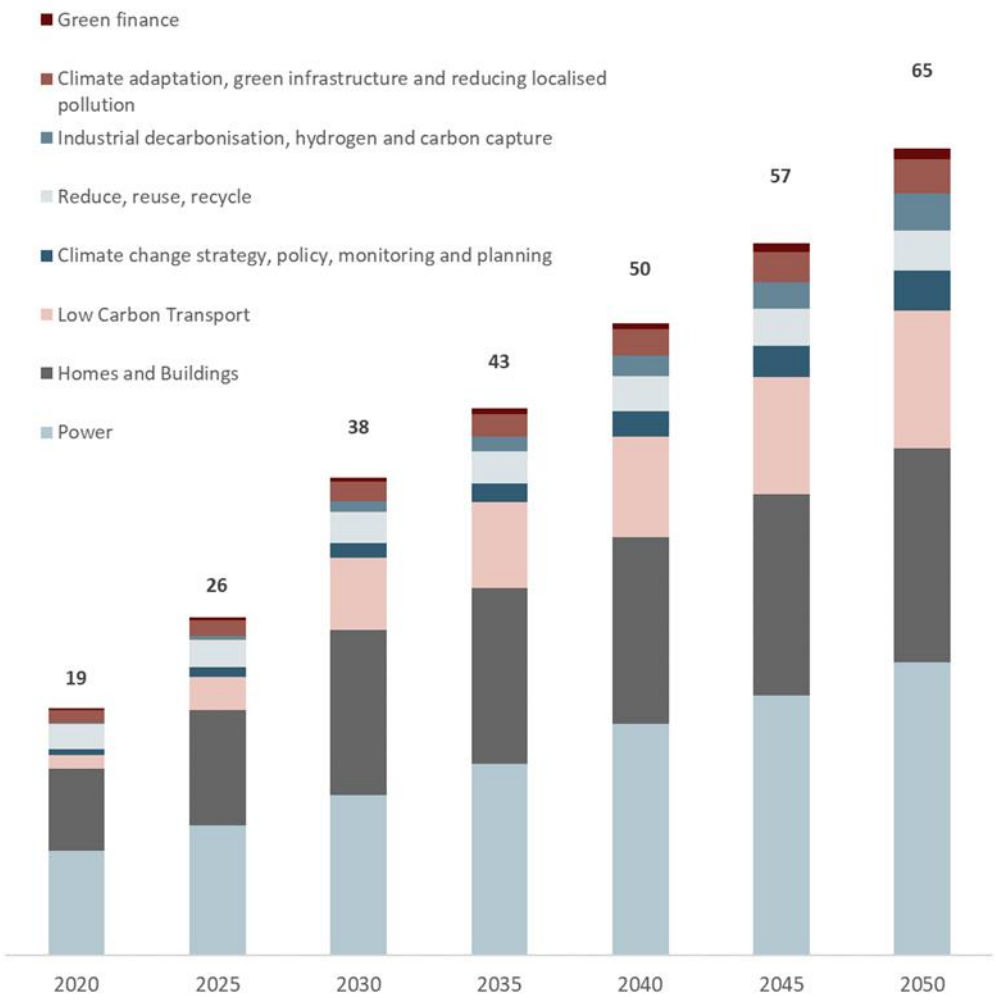
# Projections of yearly growth rates of green jobs by sector, central scenario (gross increase)

| | 2021-2030 | 2031-2040 | 2041-2050 |
|---|---|---|---|
| Climate adaptation | 5% | 5% | 5% |
| Climate change Research and Development | 11% | 5% | 5% |
| Climate change strategy, policy, monitoring and planning | 11% | 5% | 5% |
| Green and Blue infrastructure | 4% | 2% | 2% |
| Green finance | 11% | 5% | 5% |
| Homes and Buildings | 7% | 1% | 1% |
| Industrial decarbonisation, hydrogen and carbon capture | 22% | 7% | 7% |
| Low Carbon Transport | 18% | 3% | 3% |
| Power | 4% | 4% | 2% |
| Reduce, reuse, recycle | 2% | 1% | 1% |
| Reducing localised pollution | 5% | 5% | 5% |

*Source: WPI Economics calculations*

# Central projection for green jobs by 2050

Projections of green jobs in South London (thousands)




*Source: WPI Economics calculations*

- Our central projection is around 38,000 green jobs in South London by 2030 and around 65,000 by 2050.

By 2050, three sectors are projected to account for almost 3 in 4 of South London's green jobs:

- Power (34%),
- Homes and Buildings (25%), and
- Low carbon transport (16%).

Over the decade preceding the pandemic, total employment grew by 13% over the whole period, or 1.2% per year, while the estimated growth rates for most green sectors in the coming decades tend to be above 4%.

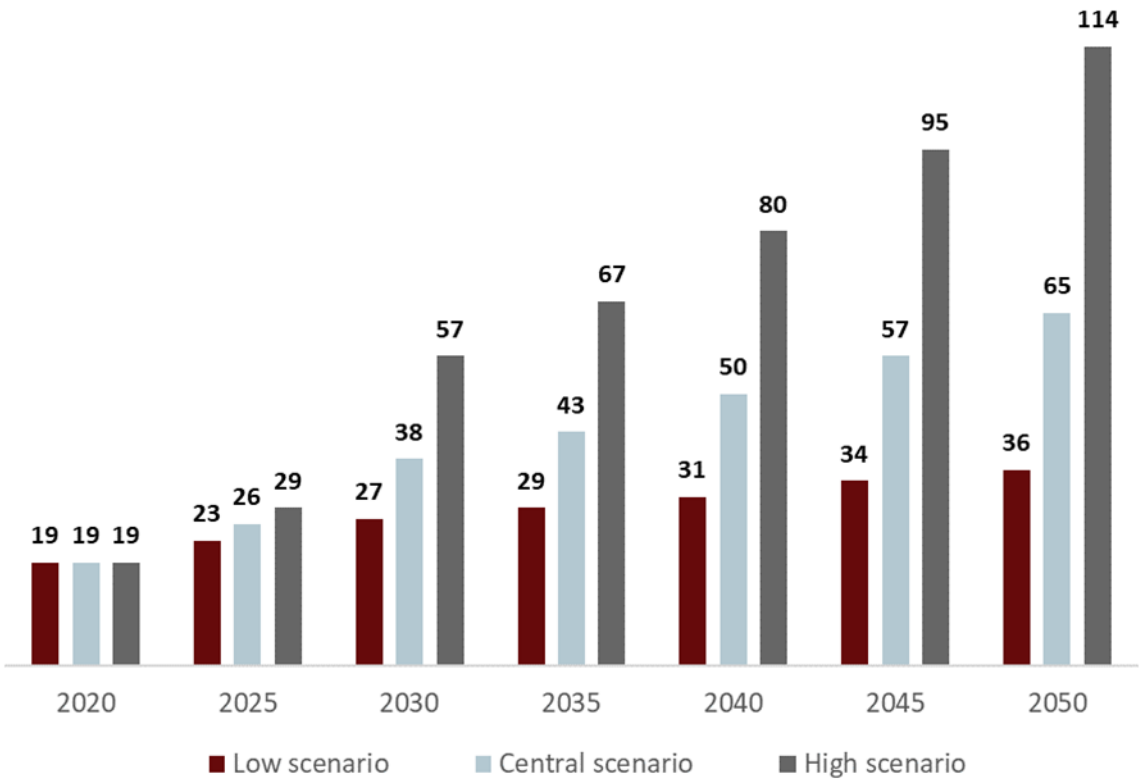
The sectors expected to have fastest growth are:

- Industrial decarbonization, hydrogen and carbon capture,
- and Low carbon transport.

Across the majority of green sectors, employment is expected to grow faster in the 2020s in comparison to subsequent decades.

# The number of green jobs in the next three decades is highly uncertain

Scenarios for projections of total green jobs in South London (thousands)

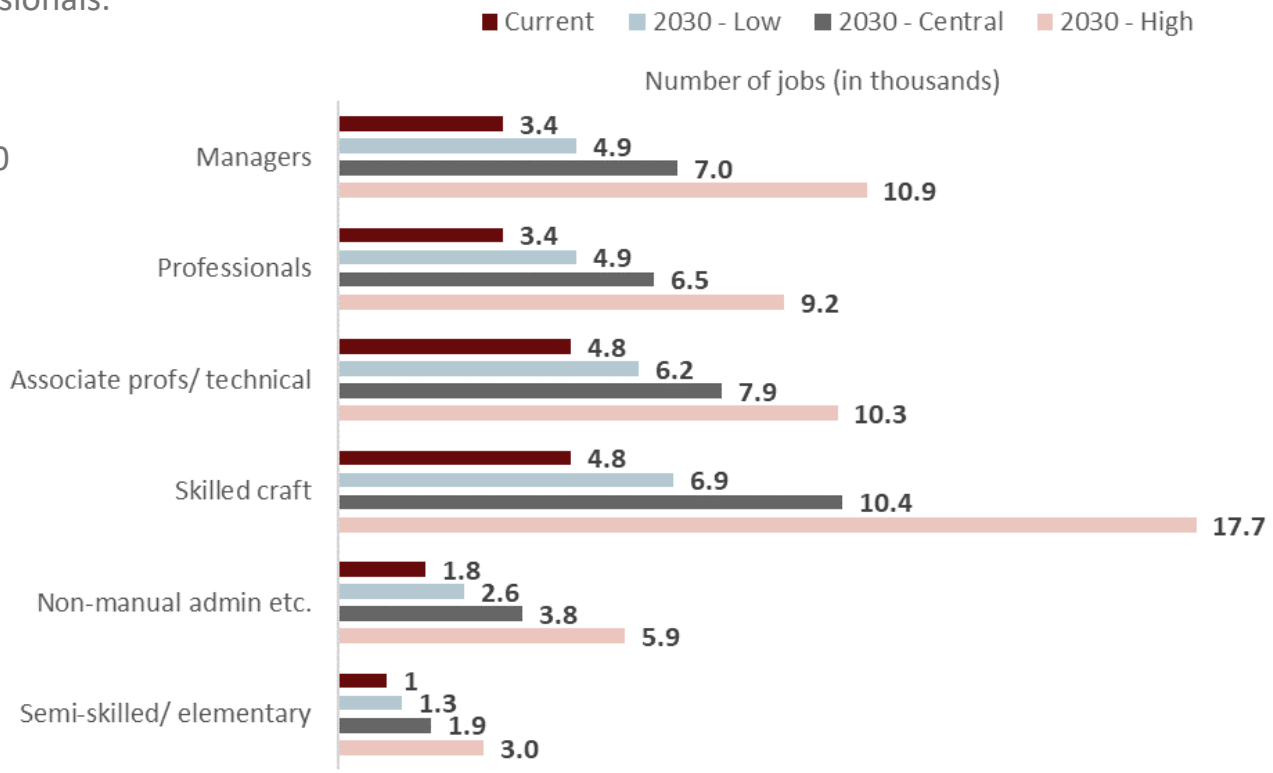



- Our low projection still sees substantial growth, but to only around 36,000 green jobs by 2050, rather than 65,000. This represents the potential impact of skills shortages, lower uptake rates and / or less effective policy
- Our high projection represents potential benefit of moving faster to meet the 2030 net zero target, leading to up to 114,000 green jobs by 2050

*Source: WPI Economics calculations*

# Projections of jobs by occupation to 2030

- The implications of the central scenario for employment by occupation to 2030 are an increase of 118% in skilled craft workers, and increases of 104% and 93% in managerial and professional employment respectively; associate professionals are projected to grow more slowly (65%).
- In 2030, there would be 10,400 skilled craft workers, 7,900 associate professional workers, 7,000 managers and 6,500 professionals.
- But under the high growth scenario, the number of skilled craft workers in 2030 would be 17,700, almost 4 times the current level …
- … with a near-threefold increase in managers and professionals.
- These occupational projections assume the occupational mix within each of the four broad sectors will remain the same over time, but each sector grows at a different rate.



# Detailed occupational changes, and skills supply implications

## Largest increases to 2030 among skilled craft workers under central scenario

- 1,700 more electricians – 122% increase
- 1,200 more gardeners and landscape gardeners – 142% increase
- 1,000 more plumbers and heating & ventilation engineers – 142% increase

## Largest increases to 2030 among man/prof/ technical workers under central scenario

- 2,100 more business associate professionals (business systems analysts, data analysts etc.) – 56% increase
- 1,000 more production managers and directors in construction – 142% increase
- 500 more financial managers and directors– 143% increase

- Nationally, there are skills shortages currently for many of these occupations – electricians, plumbers, and production managers in construction.
- Green sectors currently draw substantially more staff from other sectors, than straight from education – but if all new jobs were filled by entrants from education, the sector would need to attract half of all FE/HE leavers with relevant skills.
- To ensure a sufficient supply for these new jobs, there is an urgent need to:
    - Increase education provision in subjects and courses that are relevant for green jobs
    - Increase the proportion of those taking relevant courses who progress to employment within green sectors; and
    - Increase the flows from other, non-green, sectors into green sectors, including through re-skilling training

# Impact of net zero on the total number of jobs in South London

# Overall impact on employment

These jobs are not all additional jobs to the London economy because:

- A non-green job may have become a green job;
- Some jobs may cease to exist.

But modelling for the CCC has found that there will be an increase in the **net number of jobs in the UK** due to the change to a net-zero carbon economy by 2050 because:

i. The transition to a low carbon economy requires that investment is brought forward into capital-intensive technologies, stimulating economic demand;

ii. The decarbonisation of power reduces the imports of oil and gas, which in turn increases domestic production, leading to increases in GDP and employment; and

iii. Electricity prices are expected to fall, as economies of scale for low carbon energy technologies are substantial. Low electricity prices boost GDP and employment and also reduce consumer prices across the economy.

**Employment is projected to be around 1% higher by 2035, equivalent to 300,000 net jobs across the whole of the UK economy.**

We have estimated the impact on South London economy of the move to net zero policies by overlaying these sectoral changes on South London's pattern of sectoral employment.

*Estimated impact of net zero policies on net employment in the UK, by sector*

| Sector | Employment, UK (% change from baseline of current policies rolled forward) | |
|---|---|---|
| | 2030 | 2050 |
| Agriculture | 4.2% | 2.9% |
| Mining and refinery | -7.8% | -11.0% |
| Utilities | 4.5% | 35.5% |
| Manufacturing and construction | 1.1% | 0.5% |
| Distribution, retail, hotel and catering | 1.8% | 0.9% |
| Transport and communications | 2.0% | 0.1% |
| Services | 0.2% | 0.0% |

*Source: Climate Change Committee (2020) Economic Impact of the Sixth Carbon Budget (Cambridge Econometrics)*

# Estimated impact of net zero policies on net employment in South London

- We find that if South London's sectoral changes are in proportion to the rest of the UK then overall employment in London could be 3,900 higher in 2030, and 1,700 higher in 2050 due to the move to net zero policies compared to current policies.
- This is a positive, although represents only a small proportion of overall employment (less than 1%).

*Estimated impact of net zero policies on net employment in South London*

| Sector | Latest data | Estimated jobs in South London (2030) | | | Estimated jobs in South London (2050) | | |
|---|---|---|---|---|---|---|---|
| | | Based on current policies | With net zero policies | Change due to net zero policies | Based on current policies | With net zero policies | Change due to net zero policies |
| **Agriculture** | 300 | 300 | 300 | **0** | 200 | 200 | **0** |
| **Mining and refinery** | 0 | 0 | 0 | **0** | 0 | 0 | **0** |
| **Utilities** | 2,000 | 1,800 | 1,900 | **100** | 1,400 | 1,900 | **500** |
| **Manufacturing and construction** | 34,800 | 35,300 | 35,700 | **400** | 34,800 | 35,000 | **200** |
| **Distribution, retail, hotel and catering** | 98,500 | 102,000 | 103,900 | **1,900** | 102,100 | 103,000 | **900** |
| **Transport and communications** | 44,300 | 47,200 | 48,100 | **900** | 50,200 | 50,300 | **100** |
| **Services** | 261,200 | 291,500 | 292,100 | **600** | 332,300 | 332,300 | **0** |
| **Total - South London** | 441,000 | 478,000 | 482,000 | **3,900** | 521,000 | 523,000 | **1,700** |
| **Whole of London** | 5,368,000 | 5,853,000 | 5,900,000 | **47,200** | 6,443,000 | 6,462,000 | **19,400** |

*Source: WPI calculations based on Climate Change Committee (2020) Economic Impact of the Sixth Carbon Budget (Cambridge Econometrics) and ONS Business Register and Employment Survey*

# Jobs at risk from decarbonisation

# Carbon intensive industries

Following the method in the report *Greening the Giants (Onward, 2021)* we gathered information on "carbon intensive sectors" i.e. those sectors that either have emissions above 100tCO2e per job or which contribute more than 2% of annual total UK emissions. These are:

- Agriculture
- Aviation
- Carbon intensive manufacturing
- Coal and lignite mining
- Construction
- Electricity, gas, steam and air conditioning supply
- Land Transport
- Oil and gas
- Retail*
- Shipping and fishing
- Steel
- Waste and sewerage

*In common with Onward, we exclude retail from the cross-sectoral analysis because the sector has been assessed as having 91% of jobs not exposed to the transition. We also exclude Coal and lignite mining, as there are no jobs in this sector in London in 2019.

# Jobs in carbon intensive sectors, South London

- We identify that 40,000 of South London's 441,000 jobs (9%) are in carbon intensive industries and therefore at highest risk of change. This is within the parameters of the rest of the UK (11%) and London (7%) economy.
- Although it is not possible to get demographic data at a detailed industrial breakdown, we can establish the likely picture by using the broad section level SIC codes for each of the ten areas.
- Construction and Land Transport are the key areas of focus by employment size:
- Construction has a lower proportion of non-white workers than compared to all industries across London (24% versus 36%), and the national data suggests it is male-dominated (14% of workers are women, compared to an average of 48% across all industries). The sector also tends to employ fewer younger workers and a greater number of older workers than other industries.

## *Jobs in carbon intensive sectors*

| | SIC code section | Employment, 2019 | Proportion of employees that identify as an ethnicity other than "White" | | Proportion of people in employment that identify as female | | Proportion of people in employment aged 16-64 that are under 25 | | Proportion of people in employment aged 16-64 that are over 50 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | South London Partnership | *London* | *United Kingdom* | *London* | *United Kingdom* | *London* | *United Kingdom* | *London* | *United Kingdom* |
| | | | *NB/ This data is at the SIC code section level only for London and the United Kingdom, not lower level geographies* | | | | | | | |
| Construction | F | 24,500 | 24% | 7% | - | 14% | 4% | 10% | 35% | 38% |
| Land Transport | H | 12,565 | 55% | 18% | 39% | 22% | 4% | 7% | 22% | 31% |
| Waste and sewerage | E | 1,075 | 56% | 7% | - | 23% | 8% | 8% | 19% | 31% |
| Carbon intensive manufacturing | C | 860 | 38% | 9% | - | 27% | 10% | 9% | 35% | 36% |
| Electricity, gas, steam and air conditioning supply | D | 670 | 44% | 10% | - | 23% | 8% | 8% | 19% | 31% |
| Agriculture | A | 265 | 4% | 1% | - | 26% | N/A | 14% | 30% | 62% |
| Shipping and fishing | Mostly H | 115 | 55% | 18% | 39% | 22% | 4% | 7% | 22% | 31% |
| Aviation | H | 55 | 55% | 18% | 39% | 22% | 4% | 7% | 22% | 31% |
| Steel | C | 15 | 38% | 9% | - | 27% | 10% | 9% | 35% | 36% |
| Oil and gas | B | 0 | Not applicable as zero jobs in sub-region | | | | | | | |
| Coal and lignite mining | B | 0 | Not applicable as zero jobs in sub-region | | | | | | | |
| **Total in carbon intensive sectors** | | **40,000** | | | | | | | | |
| **All industries** | | **441,000** | **36%** | **13%** | **-** | **48%** | **7%** | **11%** | **27%** | **34%** |

*Source: ONS Business Register and Employment Survey (BRES) and Annual Population Survey (APS). Notes: The data on gender breakdown of industries in London for SIC codes A-F is not available; the ONS say the figures are suppressed as they are statistically unreliable.*

# CONTACT US

www.wpieconomics.com info@wpieconomics.com @wpi_economics