Greater London (hereafter London) is an administrative area governed by the Greater London Authority.¹ The population of London in 2020 was 9,002,488.² In that year, the employment rate for people aged 16 to 64 in London was 75.4 per cent³ and the unemployment rate was 5.7 per cent.⁴

**Context**

The UK government’s Ten Point Plan⁵ aims to support up to 250,000 green jobs in the UK by 2030 and plans over £5 billion (and much more from the private sector) to support a green recovery. London’s growing ‘low-carbon and environmental goods and services’ sector already employs 250,000 people (an increase by 58 per cent in the last ten years).⁶ The Green New Deal⁷ for London seeks to address the climate and ecological emergencies and improve air quality by doubling the size of Greater London’s green economy by 2030. It specifically points to poorer communities and Black, Asian and minority ethnic (BAME) communities as hit hardest by the Covid-19 crisis and affected by environmental inequalities (e.g. lack of access to green space and poor air quality), and it commits to create good-quality jobs and target those most in need.
Green job opportunities

According to 2017 data, the mean number of employees working in green jobs in small- and medium-sized enterprises (SMEs) in the UK was 0.99 (compared to 1.68 at the EU level).8

There were about **234,300 green jobs** in London in 2020, most of them concentrated in six sectors:

- **Power and renewables** (82,900), mainly in North-East and East London
- **Green finance** (50,700) mainly in Central London
- **Homes and buildings** (58,200) mainly in North-East and East London
- **Reduce, reuse, recycle** (14,500) mainly in Central London, South, West and Central London
- **Low-carbon transport** (13,700) mainly in Central London
- **Climate change strategy, policy, monitoring and planning** (4,100)

*Given that these sectors offer few opportunities for people with low qualifications, they are excluded from the analysis below.*

Occupations in these sectors suitable for people with low qualifications are:

- **Power**: Skilled craft occupations (accounting for 15 per cent of occupations in the power sector) such as cable jointer, craft apprentice, wind turbine technician, mechanical technician, overhead linesperson, power network craftsperson.
- **Homes**: Electricians and electrical fitters (accounting for 14 per cent of occupations in the homes sector), gardeners and landscape gardeners (10 per cent), plumbers and heating and ventilating engineers (8 per cent), other construction and building trades (6 per cent).
- **Reduce, reuse, recycle**: Electricians and electrical fitters (accounting for 13 per cent of occupations in the reduce, reuse, recycle sector), vehicle valeters and cleaners (8 per cent), vehicle technicians, mechanics and electricians (6 per cent), metal working production and maintenance fitters (5 per cent).
- **Low-carbon transport**: Operators of public transport services, train and bus drivers, technicians.
The Skills-OVATE data gives insights to job opportunities advertised online. While it does not provide data for green jobs specifically, it provides important context information about the local job market. To focus on occupations suitable for people with low qualifications, we excluded occupations such as professionals, managers or researchers, which likely require a university degree. The analysis of 82,697 online job advertisements (OJAs) found in inner London (see Annex A) shows that the occupations that could be suitable for people without tertiary education were care workers (4,121), science and engineering technicians (3,014), machine and plant operators (2,676), office clerks (2,383), metal and machinery workers (2,357), drivers and vehicle operators (2,296), sales workers (2,183), ICT technicians (1,912) and technical labourers (1,834). The specific search for green jobs carried out by RAND Europe (see Methods) identified 160 jobs in the UK, including 57 in London. Most of the London jobs were in the private sector (50) and were offered either by green employers (meaning those from green industries, such as waste management) (26) or other employers (24). While only the minority of adverts (25) provided salary indications, the average annual salary in London amounted to £37,619. Key sectors included other professional, scientific and technical activities (22), architectural and engineering activities, including technical testing and analysis (10), public administration and defence (7). Among the main occupation were science and engineering professionals (36), science and engineering associate professionals (7), and business and administration professionals (5). Most of these opportunities would not be suitable for people with low qualifications.

Future scenarios estimate the number of green jobs in London to be between 604,000 and 1,806,000 by 2050. By 2050, the sectors which provide the majority of green jobs for people with low qualifications in London are predicted to be homes, power, low-carbon transport and reduce, reuse and recycle (Figure 1).

**Figure 1. Low, central and high projections of green jobs in London in 2050 (in thousands)**

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>Central</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homes</td>
<td>95</td>
<td>152</td>
<td>152</td>
</tr>
<tr>
<td>Power</td>
<td>139</td>
<td>233</td>
<td>384</td>
</tr>
<tr>
<td>Low-carbon transport</td>
<td>47</td>
<td>147</td>
<td>437</td>
</tr>
<tr>
<td>Reduce, reuse, recycle</td>
<td>16</td>
<td>23</td>
<td>37</td>
</tr>
</tbody>
</table>

Source: Edgar at al. (2021)

Note: Sectors likely to offer few opportunities for people with low qualifications (e.g. finance, climate change strategy, climate change research) were excluded from the analysis.
Anticipating that green jobs will be more present across all sectors of the economy and across all occupations in future, Cedefop’s EU Skills Panorama forecasts for employment growth are used to identify where more or fewer jobs are expected in general. These projections are available at the country level for the 2020–2030 period. Occupations suitable for people without tertiary education (i.e. excluding managers, professionals, etc.) with the highest employment growth by 2030 are expected to be farm and related workers, elementary workers, and service and sales workers (see Annex B).17

Skills needed for green jobs

Most green sector workers in London (65%) have a degree or higher education (6%) and those with qualifications below A-levels or equivalent (i.e. Regulated Qualifications Framework (RQF) Level 3) are in minority.18 This is evident in the power sector where 89% of workers have a degree or equivalent but in the homes sector this falls down to 35%, and the proportion (26%) is even lower in the reduce, reuse and recycle sector. These two sectors attract more people with no qualifications (homes 5% and reduce, reuse and recycle 7%), other qualifications (8% and 21%), GCSE graded A*–C or equivalent (16% and 10%), GCE A level or equivalent (26% each).19

The home sector has a relatively high proportion of occupations in skilled crafts and the power sector in associate professionals (Figure 2).

Figure 2. Occupational breakdown of green jobs overall and by broad sector, London 2020 (in %)

<table>
<thead>
<tr>
<th>Broad Sector</th>
<th>Managers</th>
<th>Non-manual administrators</th>
<th>Professionals</th>
<th>Skilled crafts</th>
<th>Associate professionals</th>
<th>Semi-skilled/elementary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>14</td>
<td>25</td>
<td>51</td>
<td>3</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Homes</td>
<td>23</td>
<td>10</td>
<td>10</td>
<td>47</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Reduce, reuse, recycle</td>
<td>20</td>
<td>2</td>
<td>11</td>
<td>39</td>
<td>21</td>
<td></td>
</tr>
</tbody>
</table>

Source: Edgar et al. (2021)
Note: The authors use Standard Occupational Classification (SOC). Sectors likely to offer few opportunities for people with low qualifications (e.g. finance, climate change strategy, climate change research) were excluded from the analysis.
Demand for green skills in London include construction of electric vehicle, charging infrastructure, energy-efficient retrofitting for buildings, low-carbon heating technology, solar photovoltaic installation and construction of active travel infrastructure. However, research on helping the construction sector in the UK become more environmentally friendly argued the workforce was already capable of building the infrastructure needed to achieve net zero emissions but saw a shortage of skilled workers required to build the infrastructure and a need to transform the values and attitudes of workers and firms in the sector so that they were more familiar and comfortable with ‘greening’.

The analysis of skills in the Skills-OVATE data for inner London shows that the most frequently sought characteristics were soft skills, namely attitudes, communication, generic programmes and qualifications, or assisting and caring. This is not surprising as these skills are applicable across sectors and occupations that would require different technical or sector-specific skills. Employers also often looked for management skills, ability to work with computers, knowledge of business, administration and law, ICT skills, information skills, skills needed in engineering, manufacturing and construction, knowledge of health and welfare, as well as natural sciences, mathematics and statistics (see Annex A).

The analysis of green jobs identified by RAND Europe shows that most green job adverts in London (45 of 57) did not indicate the minimum years of required experience. Only a few jobs required minimum five years (3) and the average was about three years of expected experience. In terms of qualifications needed, 32 adverts indicated either bachelor’s or master’s degree and only 1 listed other specialised technical qualifications. This reflects both the employment structure in London and the overrepresentation of some sectors in OJAs. In relation to skills, very few advertisements explicitly required green skills and those that did asked for knowledge of environmental topics and issues (16), experience in the energy sector (3), knowledge of aspects of sustainable building (3), or knowledge of climate change and protection (3). Other skills sought after by employers included knowledge related to natural sciences, mathematics or statistics (44), communication, collaboration and creativity (22), working with computers (14), engineering, manufacturing and construction (9), information skills (7) or management skills (5).

Overall, the number of all jobs requiring a high-level qualification (RQF4+) in the UK as a whole is expected to grow and the number of workers with qualifications at RQF Level 1 or below (entry level) will fall (see also the Cedefop projections in Annex B). As London already employs the largest share of workers qualified at RQF4+, these differences will become more visible, reflecting the sectoral and occupational structure of the city where many jobs are in education, administration, banking and finance.

Training and education provision for green skills

Numbers of further education learners in Level 2 and above qualifications associated with green building and construction, as well as in environmental conservation, have grown between 2014 and 2019. However, in the same period the number of all learners in Level 3 went up but the overall number of learners in Level 2 decreased pointing to a shift toward higher qualifications. In addition, apprenticeship opportunities allow learners combine on-the-job
training with studying at college. Of nearly 20,000 apprenticeships in qualifications associated with green skills identified, the majority fell in business, administration and law (14,720 of which were in advanced and higher apprenticeships), leaving fewer opportunities for people with low qualifications; other sectors included engineering and manufacturing technologies (3,710 of which were in intermediate and advanced apprenticeships) and construction, planning and the built environment (1,560 of which were in intermediate apprenticeships). 27

Several existing and future initiatives for developing green skills in London were identified. Better Futures (£900,000) and Advance London (£900,000) programmes support the growth of London-based small green firms. This funding helps them expand their programmes of business support and to increase access to more diverse communities through their grants and internship programmes. 28 The £32m Good Work for All Fund launched in August 2021 provides skills support for those most impacted by the pandemic and includes skills for green industries. 29 There is a plan to develop a green skills academy in London that would provide a high-quality training offering for the growing demand for green jobs. 30 The Adult Education Budget recovery fund launched in February 2021 offered support for training in London’s key growth sectors, including low carbon. 31

More broadly, the Green Jobs Taskforce called for the teaching of climate change and the knowledge and skills (in science, technology, engineering and mathematics (STEM) and other key subjects) required for green jobs, as well as for green careers advice and pathways to be available for all in the UK. 32

**Relevant stakeholders and interventions**

Within London, 17 key stakeholders were identified in relation to green jobs and green skills. These can be grouped into local authorities (e.g. the Greater London Authority (GLA), 33 London councils, 34 or employment services), civil society organisations (e.g. Groundwork London, 35 The Forward Trust, 36 Voyage Youth), 37 education and training providers (e.g. South Thames College, 38 Greener Jobs Alliance), 39 and employers such as national and wildlife trusts or private consultancies like Jacobs 40 or Wood PLC. 41
When it comes to green interventions, few were specifically dedicated to people with low qualifications and most were tailored to young people. The most relevant interventions are outlined below.

**Urban Ranger**
This initiative is delivered by the National Trust Morden Hall Park. It helps young people (aged 10 to 21) develop green skills through nature conservation.

It provides participants with experience of creating wildlife habitats, community orchards, installing ponds and managing native woodlands.42, 43

Examples of projects include:
- Morden Urban Rangers were thinning the shrub layer in Willow Wood at Morden Hall Park, replenishing it with native species to increase biodiversity and organising a community planting event.
- Pollards Hill Urban Rangers were regenerating the local estate and looking after local green spaces.44

**Green Teams London**
This project is implemented by Groundwork and is targeted at young people (under the age of 25) who are not in learning or employment and not looking for work, and have few or no qualifications.

It offers on-the-job training in practical horticulture and landscape skills to help them into employment. Examples of training include:
- Horticulture traineeships: A ten-week course leading towards Level 1 City & Guilds in Practical Horticulture Skills, Maths and English skills. Graduates are invited to interview for a six-month paid employment contract as a Green Team Operative.
- Horticulture with Employability Skills: Ten horticulture training sessions and a Level 1 City & Guilds Award in Practical Horticulture Skills. Participants also benefit from one-to-one sessions with employment advisors to help them prepare for the job application and interview processes. Graduates are invited to a job interview with an employer (62 per cent of trainees move into jobs).
- ‘On-the-job’ waged horticulture training with employers: A 26-week training on real grounds maintenance jobs. Participants work towards a Level 1 City & Guilds Certificate in Practical Horticulture Skills.45
Green Jobs Fair
This event is organised by the London Wildlife Trust. It helps young people (aged 16 to 25) discover green careers and meet prospective employers from the environment sector. The event provides an opportunity for young people to identify paid trainee and apprenticeship opportunities at the green sector. Participants can join a short meeting with selected employers or book a one-to-one session to get their CVs and cover letters refined. For green employers, the job fair allows to themselves and recruit talent by listing vacancies and other paid opportunities.46

Hounslow’s Green Recovery, Green Academy Programme
This programme delivered by the London Borough of Hounslow aims to provide green skills training and upskilling opportunities to everyone, but especially those most at risk of unemployment. It helps supply the green technicians, graduates and operatives needed to fuel the local Green Enterprise Zone and to attract organisations to the borough and build more employment opportunities.47

Summary conclusion
• In London, green jobs for people with low qualifications are present primarily in the homes, low-carbon transport, and reduce, reuse and recycle sectors. However, future employment opportunities for workers with low (A-levels or equivalent) qualifications or other vocational qualifications in London are expected to fall.
• Skilled crafts are the main occupations in sectors with large proportions of green jobs for workers with low qualifications. Occupations more suitable for people without a university degree include trades such as electricians, electrical and maintenance fitters, gardeners and landscape gardeners, plumbers and heating and ventilating engineers, and vehicle cleaners and technicians.
• Green skills needed in London include energy-efficient retrofitting for buildings, solar photovoltaic installation and construction of active travel infrastructure. Knowledge of environmental topics, climate change and protection was also often sought by employers. Among other skills frequently sought by (green) employers were soft skills (attitudes, communication and collaboration), digital skills (ability to work with computers and ICT skills), management skills and knowledge of business, administration and law, skills needed in engineering, manufacturing and construction, as well as natural sciences, mathematics and statistics.
• Initiatives for developing green skills in London include further education provision of Level 2 and Level 3 qualifications and apprenticeships. Funding opportunities such as the Good Work for All Fund or Adult Education Budget recovery fund have wide remits but include opportunities for green skills training.

• Several interventions aimed at developing green skills and helping people into green jobs were primarily focused on young people with few specifically targeting those with low qualifications.

Methods

1. Targeted documentation review: The review followed a protocol that spelled out the search terms, inclusion and exclusion criteria (see details in the final report). The full list of sources consulted is presented in Notes and References.

2. Analysis of EU Skills Panorama data: The analysis included Cedefop projections of future employment growth across all sectors and occupations, as well as the changes in the level of education expected in the UK by 2030. The analysis used UK data based on research conducted by Cedefop before the UK’s exit from the European Union on 31 January 2020. The dataset uses NACE Rev. 2 (statistical classification of economic activities) and International Standard Classification of Occupations (ISCO-08).

3. Analysis of Skills-OVATE data: The database provided by Cedefop collates OJAs from multiple sources, including private job portals, public employment service portals, recruitment agencies, online newspapers and corporate websites. The dataset uses NACE Rev. 2 (statistical classification of economic activities) and classification of European Skills, Competences, Qualifications and Occupations (ESCO). In December 2021, there were 82,697 OJAs in the Skills-OVATE database for inner London covering the period from the third quarter of 2020 to the second quarter of 2021. The database does not allow filtering out green job vacancies or opportunities only for people with low qualifications. OJAs do not reflect the market demand for jobs across all occupations and sectors equally well: some sectors or professions are overrepresented if they are more likely to advertise online, while others are underrepresented.

4. Online search for green jobs and data analysis: The search of www.greenjobs.co.uk and uk.indeed.com conducted on 23 September 2021 identified 57 green job advertisements in London. Data were extracted, coded and cleaned. Descriptive statistics was used to analyse the results.
Annex

Annex A. Analysis of Skills-OVATE data (Q3 2020–Q2 2021)

Figure 3. Online job advertisements (OJAs) per occupation (London)

Source: Cedefop (2022)
Note: Cut-off point is the median of OJAs per occupation (1,834).

Figure 4. Most requested skills – level 2 ESCO (London)

Source: Cedefop (2022)
Note: Cut-off point is the median of OJAs per skill (14,428).
Annex B. Analysis of EU Skills Panorama data

Figure 5. Future employment growth (% change) across occupations in the UK in 2020–2030

Source: Cedefop (2021)

Figure 6. Current and future employment for educational level possessed in the UK

Source: Cedefop (2021)
Notes and References

14. Skills-OVATE database by Cedefop collates online job advertisements (OJAs) from multiple sources, including private job portals, public employment service portals, recruitment agencies, online newspapers and corporate websites. In December 2021, there were 82,697 OJAs in the Skills-OVATE database for inner London. The database does not allow filtering out green job vacancies only. OJAs do not reflect the market demand for jobs across all occupations and sectors equally well: some sectors or professions are overrepresented if they are more likely to advertise online, while others are underrepresented.
23 Generic programmes and qualifications are those providing fundamental and personal skills education that cover a broad range of subjects and do not emphasise or specialise in a particular broad or narrow field. See: ESCO (homepage). 2022. As of 15 June 2022: https://ec.europa.eu/esco/portal/skill
30 Greater London Authority. 2021d. ‘Skilling Londoners up for the green economy.’ As of 15 June 2022: https://www.london.gov.uk/questions/2021/0276
31 Greater London Authority. 2021d. ‘Skilling Londoners up for the green economy.’ As of 15 June 2022: https://www.london.gov.uk/questions/2021/0276
34 London Councils. 2022. ‘Contact the team.’ As of 15 June 2022: https://www.londoncouncils.gov.uk/our-key-themes/environment/contact-team
38 South Thames Colleges (homepage). 2022. As of 15 June 2022: https://stcg.ac.uk/south-thames-college


Authors: Joanna Hofman, Pamina Smith, Megan Hughes, Michaela Bruckmayer

This study focused on people with low qualifications, meaning those with at most a lower secondary qualification who experience a high risk of poverty and social exclusion, and explored green job opportunities that exist for them, including those that would require reskilling (training to obtain different skills) or upskilling (training to obtain more advanced skills). In this study (unless stated otherwise), green jobs are understood as jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources, and green skills denote skills needed to adapt products, services and processes to climate change and the related environmental requirements and regulations. Evidence presented here includes national-level data (where regional and local information was not available) and focuses on data specific to green jobs or people with low qualifications. Full details can be found in the main report.

For more information on this publication, visit www.rand.org/t/RRA1603-1

About RAND Europe
RAND Europe is a not-for-profit research organisation that helps improve policy and decision making through research and analysis. To learn more about RAND Europe, visit www.randeurope.org.

Research Integrity
Our mission to help improve policy and decision making through research and analysis is enabled through our core values of quality and objectivity and our unwavering commitment to the highest level of integrity and ethical behaviour. To help ensure our research and analysis are rigorous, objective, and nonpartisan, we subject our research publications to a robust and exacting quality-assurance process; avoid both the appearance and reality of financial and other conflicts of interest through staff training, project screening, and a policy of mandatory disclosure; and pursue transparency in our research engagements through our commitment to the open publication of our research findings and recommendations, disclosure of the source of funding of published research, and policies to ensure intellectual independence. For more information, visit www.rand.org/about/principles.

RAND’s publications do not necessarily reflect the opinions of its research clients and sponsors.

Published by the RAND Corporation, Santa Monica, Calif., and Cambridge, UK
© 2022 RAND Corporation
RAND® is a registered trademark.

Limited Print and Electronic Distribution Rights
This publication and trademark(s) contained herein are protected by law. This representation of RAND intellectual property is provided for noncommercial use only. Unauthorised posting of this publication online is prohibited, linking directly to its webpage on rand.org is encouraged. Permission is required from RAND to reproduce, or reuse in another form, any of its research products for commercial purposes. For information on reprint and reuse permissions, please visit www.rand.org/pubs/permissions.

Image credits
Cover: Unsplash/Benjamin Davies; p. 7 top to bottom: Adobe Stock/prostooleh, Unsplash/Jonathan Kemper; p. 8 top to bottom: Unsplash/LinkedIn Sales Solutions, Unsplash/Jason Goodman