

**ReLondon**

# The circular economy at work:

Jobs and skills for London's low carbon future

June 2022

## Acknowledgements

The main body of this report was written by ReLondon and Valpak, with the analysis conducted by Valpak. Content was informed through a project board which included participation from the Greater London Authority and London Councils as well as participants of two stakeholder workshops, including the Ellen MacArthur Foundation.

Interviews with businesses were held to understand skills needs in the circular economy, including with the IoD, OLIO, thinkFOUND, LITTA, bio-bean, Thrift+, IKEA, SUEZ and H&M Group, among others. Meetings were also held with education providers, including with the University of Westminster, the University College London, Queen Mary University of London, CIWM, West London College and MidKent College, among others, to inform our wider research.

This report is a summary of a full technical research report and presents the key findings. For further information on the data, scenario details and wider insights that sit behind this summary please contact ReLondon.

### ReLondon

ReLondon is a partnership of the Mayor of London and the London boroughs to improve waste and resource management and transform the city into a leading low carbon circular economy. ReLondon's mission is to make London a global leader in sustainable ways to live, work and prosper, by revolutionising our relationship with stuff and helping London waste less and reuse, repair, share and recycle more.

### Valpak

Valpak, a Reconomy Group company, is a leading provider of environmental compliance, recycling and sustainability solutions since 1997. The Reconomy Group is an innovative, tech-led provider of circular economy-focused services, with the purpose of creating a truly sustainable world by conserving finite resources. Valpak operates in three main areas which are: compliance services; waste and recycling; and sustainability consulting.

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# Glossary of terms

<b>Circular economy</b>	ReLondon defines a circular economy as one in which stuff is kept in use for as long as possible, delivering the highest value it can, for as long as it can. So rather than making, using and then throwing stuff away (a linear system), a circular economy means looking at each of those stages for new ways of cycling materials and value back into the system – using materials and products again and again, in many different forms.
<b>Circular job</b>	A circular job is directly involved with or indirectly supports the objectives of a circular economy.
<b>Circular skills</b>	The knowledge, competencies, and abilities to carry out tasks that support all aspects of a circular economy, keeping products and materials circulating within the economy at their highest possible value for as long as possible. Circular skills will differ according to the sector (within core, enabling and indirect) and job in question.
<b>Core circular jobs</b>	Jobs in circular economy businesses that ensure materials cycles are closed, with materials being cycled for as long as possible at the highest possible value. This includes reuse and repair, renting and leasing of products, as well as recycling of materials and resources. In this research, all jobs within businesses whose core function is linked to circular activities are assumed to be 100% circular.
<b>Enabling circular jobs</b>	Jobs in the supply chain of core circular economy businesses. These jobs enable core circular economy businesses to accelerate growth and scale-up, such as businesses that develop digital technology or logistics services. In this research, the share of enabling circular jobs is assumed to be proportional to the monetary value of the goods and services supplied to the core circular sector.
<b>Green economy</b>	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. <sup>2</sup>
<b>Green jobs</b>	Within the Central London Forward, Local London, South London Partnership and West London Alliance's <i>Green Jobs and Skills in London: cross-London report</i> <sup>3</sup> , green jobs are defined as those jobs that facilitate meeting net zero and broader environmental goals.
<b>Indirect circular jobs</b>	Jobs in the supply chain of core circular businesses that indirectly support their activities, such as government and professional services. In this research, the share of indirect circular jobs is assumed to be proportional to the monetary value of the goods and services supplied to the enabling and core circular sectors.
<b>Linear jobs</b>	A linear job is not involved with or supportive of the objectives of a circular economy, such as jobs in mining, extraction, and fossil-based sectors. In this research, all jobs within businesses whose function is not linked in any way to the circular economy are assumed to be 0% circular.
<b>Net job creation</b>	Net job creation for the purposes of this report means gross jobs created less the number of jobs that disappear as a result of an expansion in the core circular economy. For example, with less waste created in a circular economy, there will be fewer jobs in the different waste management routes such as landfill or recycling.
<b>Referable scheme</b>	An application for planning permission of potential strategic importance by the Mayor of London Order 2008. Any application which meets one or more of the PSI Categories outlined in the Order (Categories 1-4) must be 'referred' to the Greater London Authority. <sup>4</sup>
<b>Waste hierarchy</b>	Defra's waste hierarchy guidance ranks waste management options according to what is best for the environment. For instance, preventing waste in the first place is of top priority. When waste is created, priority is given to preparing it for re-use, followed by recycling, recovery, and finally disposal (e.g. landfill). <sup>5</sup>

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# Foreword

# 01



# 1. Foreword

It is now widely accepted that a transition to a circular economy is urgently needed if we are to tackle consumption-based emissions and their significant role in the climate emergency<sup>6</sup>; there has however been less of a consensus to date on the contribution it can make to the jobs market and the wider economy.

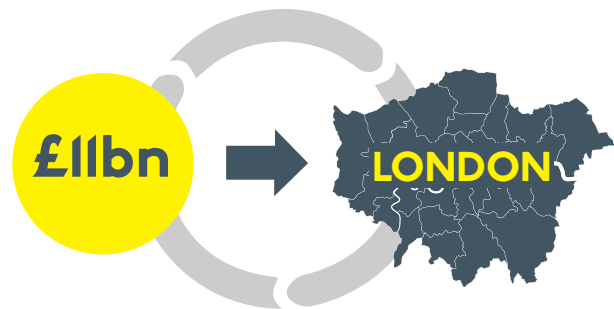
While there has been some good research in this area, previous studies in London modelled how many jobs could be created in the circular economy but focused narrowly on the waste sector<sup>7</sup> and consequently significantly underestimated the contribution the wider circular economy transition can make.

But this new report reveals that we have been looking at this through the wrong lens, and with the wrong definitions. Previous analysis relied on a definition of circular jobs as being those associated with waste management and recycling, or closely associated specialisms such as refurbishment or repair; it also relied on a definition of circular economy as a stand-alone sector.

What follows is a powerful argument, built on a robust evidence base, that circular economy is not a 'sector' but rather a system, and therefore its impact on materials, food, products and services permeates the entire economy. Side-lining circular economy as a sector means that we ignore a whole raft of crucial activities and jobs that underpin it, and that its importance to London's low carbon goods and services sector is underplayed.

By more clearly defining what constitutes a circular job, we see them everywhere. They're not restricted to recycling managers, refuse collectors, reclamation yards or bike repair mechanics: they include app developers, strategy consultants, supply chain managers, educators, architects and builders, financial

administrators, designers and marketers, customer service roles, manufacturing staff and many more. By looking not just at 'core' circular economy jobs, but also at those indirectly supporting and enabling circular businesses, the ripple effects and the benefits that investing in circularity can bring to a whole host of people across the entire city can be clearly seen.



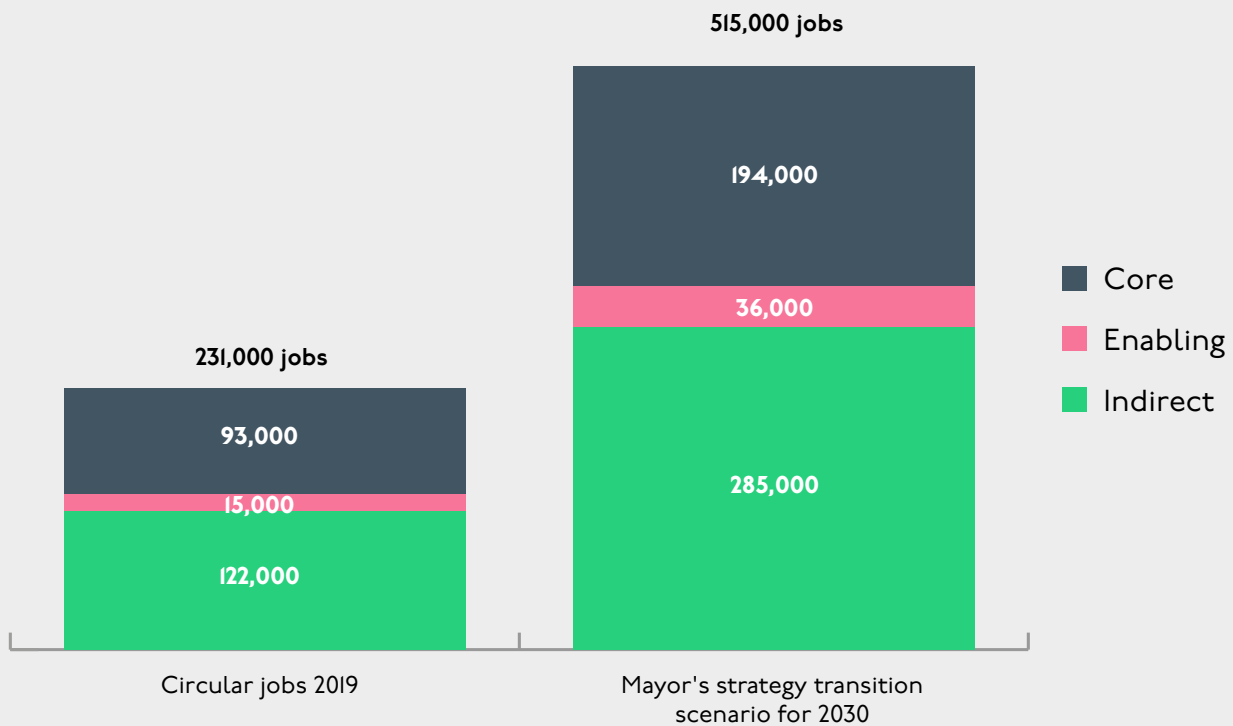
**London's circular economy contributes around £11bn (or 2.5%) to London's economy. This could grow to a total of £24.2bn by 2030.**

And the numbers are significant. On top of the substantial environmental gains that a circular economy can deliver, it also has the double dividend of contributing significantly to job creation and economic growth. A circular transition scenario has been modelled which relies on high citizen awareness and demand alongside significant increases in the supply of circular products and services. This scenario is described in section 6 below.



The scenario shows that, if the city meets the Mayor of London’s waste and recycling targets set out in the London Environment Strategy, preventing 450 thousand tonnes of waste, increasing the municipal recycling rate to 65% and recirculating 1.1 million tonnes of stuff through sharing, donation, reuse and recycling, an impressive 284,000 additional new circular jobs could be created by 2030.

Figure I. Potential circular economy jobs growth in London from 2019 to 2030 in the Mayor’s strategy transition scenario<sup>8</sup>



Source: Valpak analysis based on ONS BRES data, 2019

London’s Green New Deal<sup>9</sup> mission aims to create tens of thousands of jobs through doubling the size of the city’s green economy by 2030. While the relationship between ‘green’ and ‘circular’ jobs needs closer analysis, a circular economy can clearly play a significant role in helping meet the ambitions of both the Mayor of London and London’s boroughs to tackle consumption-based emissions while creating more, better jobs for Londoners.

It can provide a range of well-paid job opportunities across a diverse array of sectors and skills levels: wages in core circular jobs are on average £710 per week, which is substantially (183%) above the London Living Wage<sup>10</sup>.

This growth could also create significant economic value for London, with the potential for circular economy businesses to contribute a total of £24.2bn to London’s economy by 2030<sup>11</sup>.





Transitioning to a low carbon circular economy will however require concerted action at all levels of society, including national and local government, regulators, consumers and businesses, as well as adequate support for innovation and collaboration across the supply chain. Rapid changes for businesses in transition means skills training will need to be responsive and adaptive to ensure efficient and equitable matching of skills between workers and jobs; and investment in retraining and upskilling will be required through a mix of formal training, qualifications and on-the-job skills development.

But in identifying the skills needs of employers in circular economy businesses, this report shows that there is currently a skills gap in London, both for existing circular businesses and for those transitioning to become more circular. To fill this skills gap, more targeted training provision will be needed at the school, college, university, and workplace levels.

ReLondon and its stakeholders recognise the powerful role that transitioning to a low carbon circular economy can play in London's green recovery, and this report shows for the first time the scale of the opportunity it presents for jobs – all sorts of jobs, at every level and in every part of our city's economy – and for Londoners. Collaboration between businesses, government, and the education sector will be crucial over the next decade to ensure the circular economy is well-positioned to grow and deliver the maximum number of inclusive job opportunities possible; but the prize has been defined – now we must work together to win it.

**Wayne Hubbard**

Chief Executive Officer of ReLondon

# Context and aims of the research

# 02



## 2. Context and aims of the research

The Mayor of London and the majority of London boroughs declared a climate emergency in 2018. While this is a significant challenge in its own right, the capital is now also dealing with the impacts of the COVID-19 pandemic and rising costs of living.

### 2.1 Context

London's labour force has been particularly hard hit by the pandemic, resulting in higher rates of unemployment compared to the rest of the UK, particularly for young people aged 16-24 and certain minority ethnic groups.

Recognising the opportunity within these combined challenges, the Mayor of London has committed to making London a zero carbon city by 2030<sup>12</sup> and three-quarters of London's boroughs have set targets to reach net zero by 2030<sup>13</sup>. Alongside this, the Mayor of London invested £10 million in green projects in 2020 as part of the first phase of the Mayor of London and London's boroughs' Green New Deal, supporting around 1,000 green jobs to boost London's economic recovery.<sup>14</sup> The Green New Deal fund was launched in support of the London Recovery Board's<sup>15</sup> target to double London's green economy to £100 billion by 2030 in order to kick-start jobs growth over the next decade<sup>16</sup>. London Councils' Transport and Environment Committee (TEC) and the London Environment Directors' Network (LEDNet) have also committed to developing London's low carbon sector and greening London's broader economy by 2030.<sup>17</sup>

In support of London stakeholders' commitments on net zero, a significant amount of research has been done across London to define and analyse current and future green jobs as well as the skills needed to support green job growth as part of London's recovery.

However, there is limited research that assesses the role of the circular economy in future jobs, its impact on skills needs, and its contribution to London's green recovery.

In particular, when the circular economy is referenced within green jobs research, it tends to be referred to as a 'sector' and is often limited to jobs in the waste and recycling sectors. This misses out crucial activities and jobs that underpin the circular economy. For example, though the recently commissioned *Green Jobs and Skills in London: cross-London report*<sup>18</sup> includes a sector labelled 'Reduce, Reuse, Recycle - Waste management and Circular Economy', the scope of the report means that the circular economy is primarily limited to waste management, recycling and some elements of repair. This has the result of underplaying the importance of the circular economy to London's low carbon goods and services sector.<sup>19</sup>

The green recovery, and the associated role the circular economy can play through job creation and skills development, is central to ReLondon, the GLA and the London boroughs' priorities. As such, this research aims to incorporate all elements of the circular economy (i.e. more than waste management and recycling) within a circular economy job definition for London, highlighting the number of jobs that exist in the capital now and how many could be created through an expansion of circular economy activities by 2030. Current and future skills needs required to realise this growth potential are also assessed, along with a review of relevant qualifications and training provision.



## **2.2 Green versus circular economy**

This research provides an opportunity to outline the differences between a green and a circular economy to enhance understanding. While the green economy and circular economy have common objectives and both target similar sectors to deliver reductions in environmental impacts, the green economy refers to 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, while a circular economy is one in which stuff is kept in use for as long as possible, delivering the highest value it can, for as long as it can.

## **2.3 What is a circular economy?**

In addition to the substantial environmental gains that a circular economy delivers, it also has the potential to contribute significantly to job creation and economic growth.

ReLondon defines a circular economy as one in which stuff is kept in use for as long as possible, delivering the highest value it can, for as long as it can. So rather than making, using and then throwing stuff away (a linear system), a circular economy means looking at each of those stages for new ways of cycling materials and value back into the system – using materials and products again and again, in many different forms.

Designing out waste is a critical part of the circular economy and ReLondon advocates for five circular business models.<sup>20</sup> These business models are 'using stuff wisely,' 'using stuff again,' 'making things well,' 'renting, not buying' and 'sharing'. This report demonstrates the relevance of the circular economy to sectors and businesses across the supply chain and provides an evidence base of the vital role it will play in transitioning London to a low carbon future.

# Policy landscape

# 03



# 3. Policy landscape

There are a number of drivers in place to promote the transition to a circular economy and stimulate circular jobs growth in London.

## 3.1 Commitments to support the circular economy transition

Through the London Environment Strategy, 2018<sup>21</sup> the Mayor of London is positioning the city as a global leader in the transition to a low carbon circular economy through targets such as striving to send no biodegradable or recyclable waste to landfill by 2026 and aiming for a 65% municipal waste recycling rate by 2030.

The London Environment Strategy highlights the Mayor of London's role in the transition, which includes leading by example and creating market demand for circular goods and services directly through procurement and its strong policy framework, capturing a share of the market through the promotion of existing and future circular businesses, and enabling the transition by investing in infrastructure, citizens and workers. The London Plan 2021<sup>22</sup> (London's spatial development strategy) also includes circular economy objectives in a wide range of policy areas, including growing a good economy, and sets out specific policies requiring collaboration to promote a more circular economy. Further, it requires that referable schemes promote circular economy outcomes and submit a circular economy statement as part of the planning application process.

In addition to the policies and frameworks laid out in the London Environment Strategy and the London Plan, the Mayor of London launched London's Green New Deal fund<sup>23</sup> in November 2020, as part of the Mayor of London and London's boroughs' Green New Deal, to help develop the green industries that are

essential in helping the capital meet its climate targets and recover from the economic and social impacts of the COVID-19 pandemic.

Finally, to help Londoners access good jobs, the Mayor of London also launched the Skills Roadmap for London<sup>24</sup> in January 2022. This roadmap outlines initiatives to ensure Londoners can retrain, upskill, and enhance their employability, and further highlights the green economy as a pathway to job creation. As part of this vision, the Mayor of London awarded funding to organisations to establish five Academy Hubs<sup>25</sup>. These hubs were designed to break down the silos between employers, education and training providers and sector bodies so they can collaboratively identify clear pathways into employment and ensure a coordinated approach to training, work experience, advice and guidance for Londoners. One of these Academy Hubs has a specific focus on the green economy, covering roles from waste management and recycling to construction.

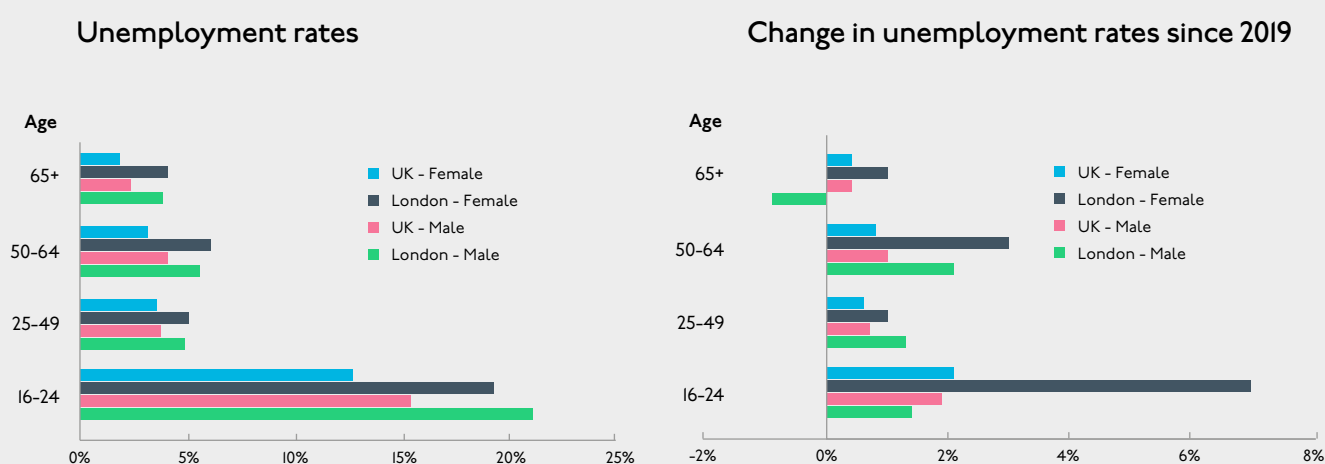
These drivers have been put in place to help stimulate growth in the green and circular economy. By jointly prioritising jobs growth and environmental goals, there is clear and demonstrated value in the role that the circular economy can have in helping to build opportunities during London's transition to a net zero carbon city. Ensuring these policies and initiatives reflect the full breadth of the circular economy and related job opportunities will be key to reaching London's environmental targets.



## 3.2 Make-up of London's economy and a just transition

There were around 5 million economically active workers in London in 2019, with 4.7 million<sup>26</sup> of those in employment. Of this workforce, around 327,000 Londoners (6.5% of Londoners available for work) were unemployed. A further 1.3 million people were economically inactive due to studying, having retired or being sick, among other reasons.

Figure 2. Unemployment rates and change in unemployment rates by age and gender in London and the UK (Jan-20 to Sep-21)



Source: ONS Annual Population survey, 2019

London's labour force has been particularly hard hit by the COVID-19 pandemic compared to the rest of the UK. As Figure 2 shows, proportionally, more of London's young working population is unemployed (21% for men and 19% for women in London versus 15% and 13% in the UK). Figure 2 also shows that the unemployment rate for young women in London has increased substantially since 2019. This is also true when looking at the employment rate for young Londoners aged 16 to 19, whose employment rate (14%) is around half of their counterparts across the UK (29%)

The pandemic has also disproportionately impacted certain minority ethnic groups in London. For example, white Londoners saw job losses of around 1% during the pandemic (roughly 30,000 jobs lost) but around 10% of black Londoners lost their jobs (roughly 50,000 jobs lost).

A crucial element of the just transition to a circular economy is ensuring access to future circular jobs by young people as well as certain minority ethnic groups, making the circular economy as inclusive as possible. The circular economy is well positioned to address this due to the wide range of good quality, local jobs available across various sectors, locations and at a range of skills levels.

# Approach

# 04



# 4. Approach

With the growing importance of addressing the climate emergency as part of London’s COVID-19 economic recovery, it is important to ensure the circular economy and its contribution to the green recovery is fully recognised.

## 4.1 Defining a circular job: core, enabling and indirect

A circular jobs definition has been developed for ReLondon that incorporates all activities and jobs that either directly or indirectly support the objectives of a circular economy. This has been done by dividing circular activities into three groups: core, enabling and indirect. The definitions of each are included in Table I.

Table I. ReLondon definition of circular jobs including core, enabling and indirect categorisation

	Definition	Assumption
Circular jobs	A circular job is directly involved with or indirectly supports the objectives of a circular economy.	
Core circular jobs <sup>27 28</sup>	Jobs in circular economy businesses that ensure materials cycles are closed, with materials being cycled for as long as possible at the highest possible value.  Examples include businesses involved in activities such as reuse and repair, renting and leasing of products, and recycling of materials and resources.	All jobs within businesses that engage in core circular activities are assumed to be 100% circular.
Enabling circular jobs	Jobs in the supply chain of circular economy businesses that enable core circular economy businesses to accelerate growth and scale-up.  Examples include jobs in the supply chain of core circular businesses that develop and provide digital technology or logistics services.	The share of jobs that are enabling or indirectly circular are assumed to be proportional to the monetary value of the goods and services supplied to the core circular sector.
Indirectly circular jobs	Jobs in the supply chain of core circular businesses that indirectly support their activities. Examples include jobs within government and professional services.	



A handful of circular jobs definitions were identified through a literature review, including definitions used by the Green Alliance/WRAP<sup>29</sup> and Circle Economy.<sup>30</sup> Given the aims of this research for London, Circle Economy's definition was considered to be the most comprehensive as it incorporates jobs that both directly and indirectly support a circular economy. Their approach uses a centralised definition and has been applied to cities across the world to categorise circular jobs as core, enabling or indirectly circular.

ReLondon's circular jobs definition builds on this existing work and adapts Circle Economy's approach (following feedback from two stakeholder workshops and the project board) by applying it to London and reconsidering how activities are allocated across the three differing categories. ReLondon's definition covers 85 sectors, each of which has several subsectors.

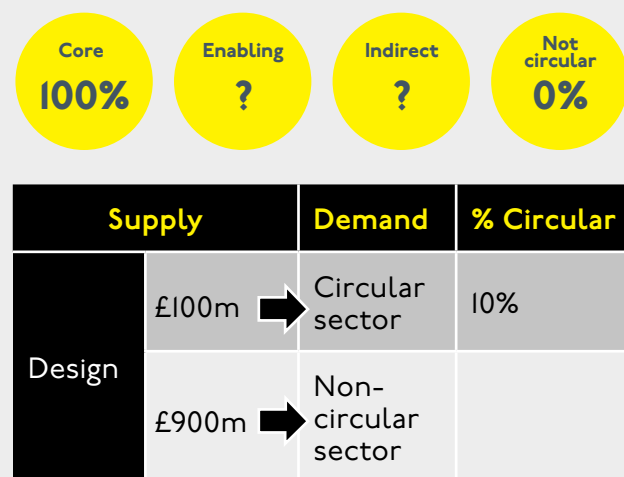
## 4.2 Mapping circular activities to core, enabling and indirect

The primary data source for ReLondon's definition is the UK Government's Office for National Statistics (ONS) Business Register Employment Survey (BRES), which maps official jobs estimates by Standard Industrial Classification (SIC) codes.<sup>31</sup> Drawing on Circle Economy's existing methodology, circular jobs in the different sectors are then allocated to core, enabling and indirect depending on how directly those activities link to the circular economy. Details of sectors within core, enabling and indirect can be found in Appendix A.

In circular sectors allocated to 'core', it is assumed that all jobs within businesses that engage in core circular activities are 100% circular. This is in contrast to sectors being defined as enabling and indirect (i.e. the supply chains providing goods and services to core circular businesses), where not all jobs are counted as circular. The extent to which jobs within enabling and indirect sectors are regarded as enabling circular or indirectly circular varies and

is determined by the value of goods and services supplied to the core sectors (using input-output tables) as shown in Figure 3.<sup>32</sup>

Figure 3. Apportioning circular jobs in enabling and indirect sectors



Source: Valpak analysis

As an illustration, if a design business in London provides services worth £100 million to a core circular business in London, out of a total supply of £1 billion worth of design services (to all economic sectors) in London, then 10% of the jobs in the design business are counted as being enabling circular jobs.

### Case study: OLIO, a core circular business

OLIO, founded in London in 2015, is a local sharing app that connects people with their neighbours, to give and get everyday things for free. OLIO's circular business model sits in ReLondon's definition of core circular jobs under reuse. The company also partners with businesses like Tesco and Iceland, to enable them to redistribute their surplus food to local communities via the app. Examples of the types of jobs at OLIO include software development, sales, account management and marketing, as well as roles developing brand impact analytics. All of those jobs are classified as core circular jobs.

# Circular jobs baseline: 2019

# 05



# 5. Circular jobs baseline: 2019

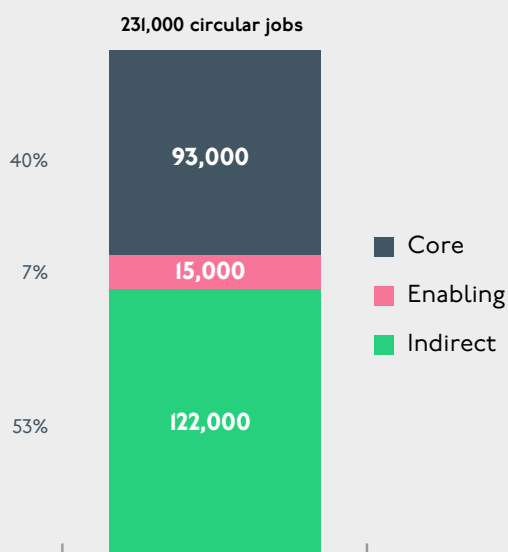
ReLondon's definition estimates that London's circular economy employed 231,000 people in 2019, representing 4.3% of London's total employment.

## 5.1 The number of jobs in London's circular economy in 2019

Breaking this down by core, enabling and indirect jobs, there were over 93,000 jobs in London's core circular economy, around 15,000 jobs in enabling sectors, and more than 122,000 jobs in indirectly circular sectors.

This highlights that 40% of all jobs in London's circular economy come from the core circular sector, with 7% from enabling circular and over half from indirectly circular sectors. This means that for every 100 core circular jobs (on average), there are 15 enabling circular jobs and 130 indirectly circular jobs employed in the supply chains of London's circular economy businesses.

Figure 4. Estimates of core circular, enabling circular and indirectly circular jobs in London, 2019



Source: Valpak analysis based on ONS BRES data, 2019

**231,000**  
people  
employed



**4.3%**  
of London's  
total employment



London's circular economy already employs around **231,000 people (4.3% of London's total employment)** with just over **93,000 jobs** in core circular businesses as well as **15,000 enabling and 122,000 indirectly circular jobs** in the supply chain supporting these core businesses.



## 5.2 Core circular jobs

Section 4 set out ReLondon’s definition of circular jobs, including the differences between core circular, enabling circular and indirectly circular jobs.

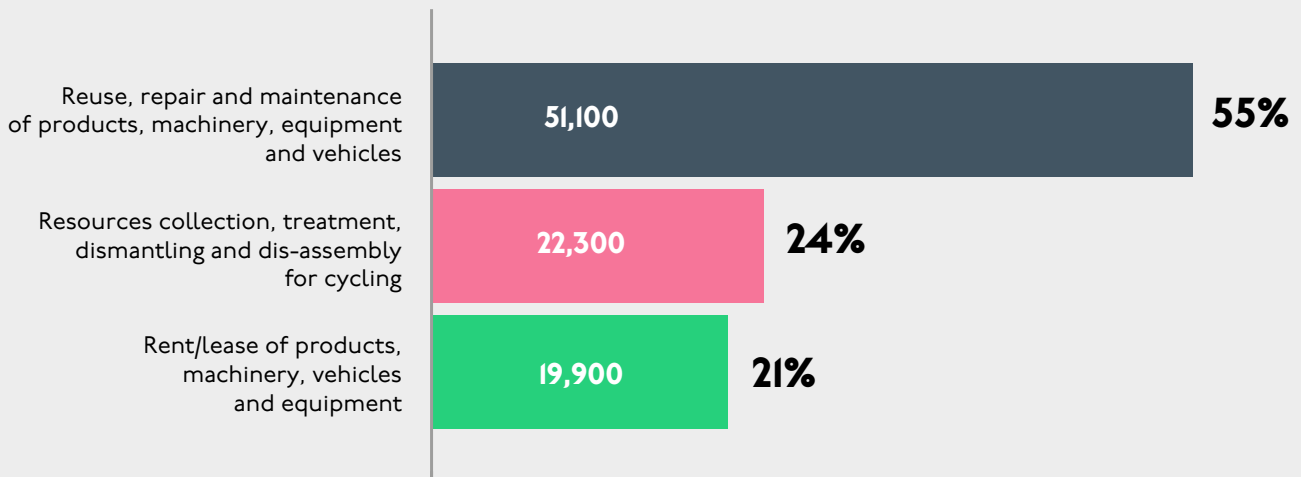
Core circular jobs include jobs in sectors such as reuse and repair, renting and leasing of products, as well as recycling of materials and resources, as shown in Figure 5 where all jobs within businesses and activities in these sectors are assumed (currently) to be 100% circular.

Average gross weekly pay in core circular jobs, ranges from £530 per week in repair of vehicles to £880 per week in repair of machinery and equipment<sup>33</sup>.

Overall, average gross weekly pay in core circular jobs is £710 per week, substantially (183%) above the London Living Wage, with job opportunities dispersed widely across the capital.

As highlighted in Figure 5, London’s core circular sectors employed over 93,000 people in 2019. Over half of the core circular jobs were in reuse, repair and maintenance of products, machinery, equipment and vehicles, compared to under a quarter in resource collection, treatment and dismantling. An example of a core circular job is a sales advisor in an electronic repair shop, facilitating the repair, reuse and recycling of electronic equipment.

Figure 5. Employment in core circular sectors in London, 2019<sup>34</sup>



Source: Valpak analysis based on ONS BRES data, 2019

### 5.3 Enabling circular jobs

As noted in Section 4, ReLondon defines enabling circular jobs as jobs that enable core circular economy businesses to grow and scale-up and include (among others) jobs in businesses that develop digital technology or provide logistics services (see Table 2 for broad sub-sectors included and Appendix A for a more detailed breakout of each category). Currently, not all jobs in these enabling sectors are 100% circular.

London's enabling circular sectors employed around 15,000 people in 2019 (these are the circular jobs). Overall, average gross weekly pay in enabling circular business is roughly £865 per week, substantially (224%) above the London Living Wage<sup>35</sup>. Average gross week pay ranges from around £540 per week in employment agencies to just over £1,230 per week in information and communication services. The majority of the enabling circular jobs in 2019 were in networking, information and communication businesses, as well as digital technology and design businesses. An example of an enabling circular job is a third-party logistics driver delivering goods (such as second-hand clothing) to a reuse platform.

Table 2. Estimates of enabling circular jobs by enabling circular sub-sectors in London's circular economy, 2019<sup>36</sup>

Enabling circular sub-sectors	Number of jobs
Circular logistics	829
Design	2,047
Digital technology	2,226
Networking, information and communication	10,177
<b>Total</b>	<b>15,279</b>

Source: Valpak analysis based on ONS BRES data, 2019

## 5.4 Indirectly circular jobs

A third layer of employment is in businesses that provide services to businesses undertaking core circular activities, such as those in government services and professional services. These sectors have been allocated to indirectly circular sectors in ReLondon's definition as not all jobs within these sectors are assumed (currently) to be 100% circular. The difference between enabling circular and indirectly circular jobs is that indirectly circular jobs are further along the supply chains of core circular businesses.

As shown in Table 3, London's circular economy employed more than 122,000 people in indirectly circular jobs in 2019, with the majority (65%) of indirectly circular jobs being in healthcare, hospitality, wholesale and retail. Other examples of indirectly circular jobs include those in finance, professional, scientific and technical support services and education. An example of an indirectly circular job is an employee working in a healthcare company that supplies healthcare services to staff in core circular businesses, allowing them to function successfully.

Table 3. Estimates of indirectly circular jobs by indirectly circular sub-sectors in London's circular economy, 2019

Indirectly circular sub-sectors	Number of jobs
Manufacturing	3,414
Construction	2,969
Wholesale and retail trade	19,930
Transportation and storage	2,975
Hospitality	10,982
Information and communication	3,349
Financial and insurance services	2,588
Real estate activities	1,687
Professional, scientific and technical support	5,136
Administrative and support services	8,865
Public administration	3,783
Education	2,634
Healthcare	48,659
Arts, entertainment and recreation	3,130
Other service activities	2,182
<b>Total</b>	<b>122,283</b>

Source: Valpak analysis based on ONS BRES data, 2019

# Circular transition scenario for London by 2030

06





# 6. Circular transition scenario for London by 2030

The Mayor of London has set targets for London to be a zero carbon city by 2030 and three-quarters of London's boroughs have set targets to reach net zero by 2030.<sup>37</sup>

London's Green New Deal aims to support the creation of tens of thousands of jobs through doubling the size of the city's green economy by 2030. In this section of the report, a circular transition scenario has been developed to estimate the number of jobs there could be in a more circular London by 2030.

## 6.1 Methodology and assumptions behind the scenario

For the purposes of this report, net job creation means gross jobs created less the number of jobs that disappear.<sup>38</sup> The scenario below corresponds to the Mayor's targets as set out in the London Environment Strategy. Referred to as the 'Mayor's strategy transition' scenario, this scenario describes how many circular jobs in London can be created by 2030 by moving up the waste hierarchy using circular approaches instead of linear approaches.

The scenario is driven by preventing waste, using stuff wisely, renting not buying, making things well, sharing and using stuff again through a variety of circular business models.

It is likely that new jobs, for example in the emerging circular sectors (such as renting, sharing and reuse), will offer new opportunities (with the right training) as developments continue to evolve beyond 2030. How and where such changes in jobs occur as London's economy evolves beyond 2030 are not considered in the circular scenario in this report. However, the analysis clearly shows that an expansion of the circular economy and moving up the waste hierarchy results in more jobs for Londoners. For example, preventing 10,000 tonnes of waste means one job is lost in waste incineration compared to 386 jobs created in prevention and redistribution sectors.<sup>39</sup>

10,000 tonnes of waste



Loss of 1 incineration job

Creation of 386 jobs in circular businesses.

**Preventing 10,000 tonnes of waste** bound for incineration would lead to the **loss of 1 incineration job** and the **creation of 386 jobs** in circular businesses.

The scenario has been developed by identifying key waste streams to be handled by more circular approaches as London’s circular economy expands. Currently, around 7 million tonnes of municipal waste are produced each year from London’s homes, public buildings and businesses.<sup>40</sup> London’s municipal waste stream is made up of a variety of materials, with the main components being food waste and green garden waste (22%) and common dry recyclables: paper, card, plastics, glass and metals (60%). The remaining 18% is made up of smaller quantities of materials including textiles, waste electricals (WEEE) and wood.<sup>41</sup> These are the key municipal waste streams that are used to develop the scenario.

To produce the scenario, the change in the projected 2030 tonnages of waste managed by the use of more circular methods (e.g. reuse, sharing etc.) was then linked to additional circular jobs using estimates of the number of jobs needed per tonne of waste. It is important to note that all baseline waste arisings data are aligned to the GLA’s municipal waste arisings figures<sup>42</sup> and that the scenario does not take into account other changes in waste and recycling policies, such as consistency in collections and materials (dry recyclables) or Extended Producer Responsibility (EPR) for packaging.

ReLondon’s circular jobs definition captures baseline jobs within the built environment sectors. However, the following scenario is specific to municipal waste and therefore the direct role of the built environment in the circular transition scenario (and the associated circular jobs) is not included. Whilst the Mayor of London’s municipal recycling target of 65% by 2030 is met in this scenario, it is acknowledged that the target may be reviewed and changed as London transitions to a circular economy.<sup>43</sup>

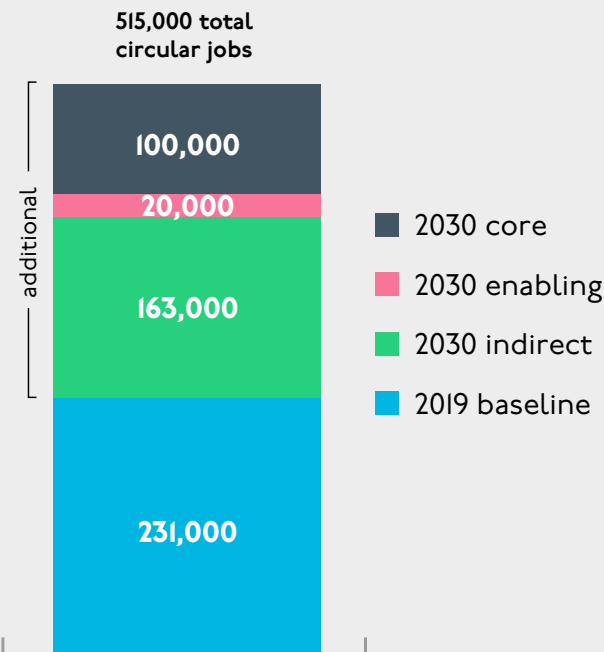
## 6.2 Mayor’s strategy transition scenario: 284,000 additional circular jobs created

The assumptions behind the Mayor’s strategy transition scenario are set out in Table 4. In addition to using official data to generate the baseline and assumptions, the scenario was developed following discussions with stakeholder working groups and members of the project board.

Table 4. Key findings according to assumptions that form the basis of the Mayor’s strategy transition scenario for London by 2030

Circular transition scenario	Results
Mayor’s strategy transition scenario	284,000 additional circular jobs created
	230 jobs lost in recycling and disposal
	450 thousand tonnes of waste prevented
	1.1 million tonnes of stuff shared, donated, reused and recycled
	Municipal recycling rate up to 65%
	Disposal reduced by 1.6 million tonnes (44%).

**Figure 6. Circular jobs potential in London by 2030 in the Mayor's strategy transition scenario<sup>44</sup>**



Valpak analysis based on ONS BRES data, 2019

Building on the 2019 baseline of 231,000 circular jobs, the potential 284,000 additional circular jobs associated with the Mayor's strategy transition scenario would total to 515,000 circular jobs by 2030.

This analysis demonstrates that moving up the waste hierarchy is not only beneficial to the environment, but it is also more effective in creating jobs in a circular economy. It also highlights the potential contribution that the expansion of the circular economy could add to London's green recovery.

While the transition will see some minimal job losses in traditional sectors, growth across core and enabling circular sectors points to a wide range of opportunities to target up-skilling and retraining programmes to leverage existing skillsets and promote a just and accessible transition across sectors. A detailed breakdown of these potential job opportunities by sub-sector can be found in Appendix B.

In the Mayor's strategy transition scenario, the circular transition in London by 2030 sees more reuse and repair activity, with limited roll-out of new circular business models. The focus is more on increasing materials for recycling, notably from businesses (the Mayor's 65% municipal recycling target is met). Core activity is supported by design changes that enhance repairability and recyclability, which together with communications activity drives behaviour change and some waste prevention (mostly food waste). Some waste disposal jobs are no longer needed, and those job losses are absorbed by expanding circular sectors. This all results in the creation of 100,000 core circular jobs, 20,000 enabling circular jobs, and 163,000 indirectly circular jobs.



# Skills needed to support the transition to a circular economy

# 07



# 7. Skills needed to support the transition to a circular economy

London's circular economy already offers a wide variety of posts and career pathways. However, to ensure all Londoners have access to the jobs that could be created through the Mayor's strategy transition scenario by 2030, they will need to possess relevant skillsets and have access to adequate and adaptive education and training provision.

This section was informed through analysis of official data as well as conversations with a range of London-based businesses that are either fully circular or are in the process of transitioning to more circular practices.

As described in Section 3.1, the Mayor has awarded funding to establish five Skills Academy Hubs one of which has a specific focus on the green economy, covering roles from waste management and recycling to construction.

## 7.1 Scope: skills definition

As shown in Section 6, there are a wide range of sectors, and therefore jobs, that will be needed to support the expansion of the circular economy over the next decade. This range means that the skills needed to support circular jobs vary depending on the sector, the business, and the role. Skills needs are also subject to change as currently linear businesses transition to more circular practices. Given this variety, there is no consensus on a single fixed circular skills definition as a range of competencies across circular businesses will be needed. For the purposes of this report, the general scope of circular skills encompasses the knowledge and abilities to carry out tasks within circular businesses to deliver the objectives of a circular economy.





## 7.2 Background: skills levels and qualifications in London

To gain an understanding of existing skills levels in London, qualifications are used in this section as a proxy for skills. As set out in Table 5, skills are identified at four skill category levels where level 4 (and above) is classified as

a high skill level (for example National Vocational Qualifications (NVQ) at this level include, higher national diplomas, degree apprenticeships, university degrees and higher degrees). Skill level 1 is classified as a low skill level (example qualifications at this level are, GCSE grades 1–3, level 1 diplomas and certificates).<sup>45</sup> A more detailed table is available in Appendix C.

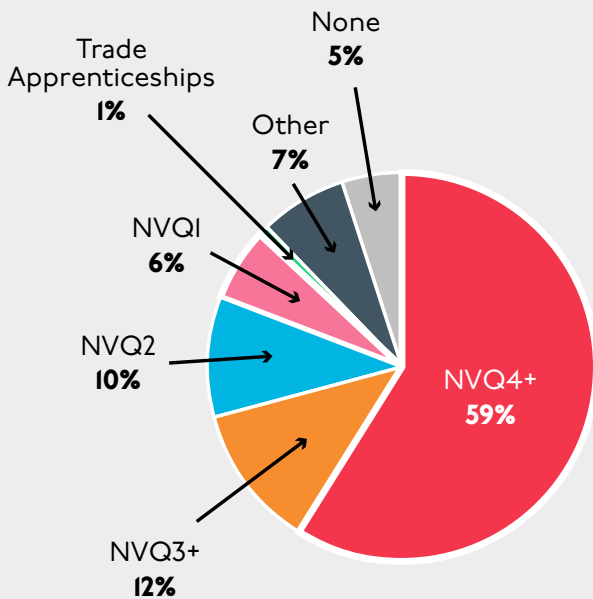
Table 5. Skills levels and example NVQ qualifications<sup>46</sup>

Major occupational group	Skill level	Example qualification
Managers, directors and senior officials Professional occupations	3,4+	Higher national diploma Degree apprenticeship Degree with honours Master of science (MSc) Doctorate (PhD or DPhil)
Associate professional and technical occupations Skilled trades occupations	3	A level Diploma Advanced apprenticeship Applied general AS level Level 3 award
Caring, leisure and other service occupations Sales and customer service occupations Process, plant and machine operatives Administrative and secretarial occupations	2	CSE - grade 1 GCSE - grades 7 – 9 Intermediate apprenticeship O level - grades A, B or C Level 2 award Level 2 certificate Level 2 diploma Level 2 national certificate Level 2 national diploma
Elementary occupations	1	GCSE - grades 1 - 3 Level 1 essential skills Level 1 functional skills Level 1 award Level 1 certificate

Source: ONS Standard Occupation Classification (SOC), 2010



**Figure 7. Qualification/skills levels in London (%)**



Source: ONS Annual Population Survey, 2020

London benefits from having a higher skilled working age population compared to the rest of the UK. Around 60% of London's residents held high skill level qualifications (NVQ4+) in 2020, compared to only 43% in the rest of the UK.<sup>47</sup>

However, while over half of London's working age population are highly skilled, there is still over a tenth of the population with low or no qualifications (around 690,000 Londoners) as seen in Figure 7. There are also comparatively fewer people with trade apprenticeships.

Since 2019, the numbers of Londoners in work with high skills has increased by 5% points (from 62% to 67%), however, those with skill levels below NVQ4+ have seen reductions in employment.<sup>48</sup>

To assess the current skills requirements of London's circular businesses, ReLondon's definition of circular economy jobs has been linked to the current skill levels required by employers in London's core and enabling sectors.

### 7.3 Current skills needs in core circular businesses

In 2019, London's core circular economy employed over 93,000 people, representing 1.7% of London's total employment. As Table 6 shows, core circular sectors currently employ around 47,400 people (over 50% of all core circular jobs) with skills at level 3 or above who are working as managers and directors, professionals or in technical and in skilled trades. There are a further 45,850 people employed in posts at skill levels 1 and 2 across a variety of occupations, from administrative and secretarial roles to sales and customer services jobs and machine operatives.<sup>49</sup>

Though there are relatively fewer jobs in core circular businesses requiring low skills (i.e. at level 1) overall, this does vary depending on the sector. For example, over a quarter of all employment opportunities in businesses in the resources management sector have low skill requirements, compared to only 8% of roles needing low skills within businesses in the renting and leasing sectors.<sup>50</sup>

## 7.4 Current skills needs in enabling circular businesses

There are currently around 15,000 enabling circular jobs in businesses across London. As can be seen in Table 6, the distribution of skills needed for these jobs is skewed towards higher skills, as 70% require skills at level 3 or above. These are jobs within information and communication, professional, scientific and technical, and education sectors.

On the other hand, only 4% of enabling circular jobs are in roles in need of skills at level 1, and around a quarter require skills at level 2.<sup>51</sup>

As a further example, Table 6 shows that while networking, information and communication businesses have high numbers of staff at skill levels 3 or above employed in professional, managerial, and technical positions, they have comparatively fewer positions needing staff at lower skill levels. This is similar for other sectors within London's enabling circular economy.

Table 6. Estimates of skills needs in core and enabling circular jobs in London's businesses, 2019

	Skill level 4	Skill level 4,3	Skill level 3	Skill level 2	Skill level 1	Total
<b>Core</b>						
Resources collection, treatment, dismantling and disassembly for re-cycling collection, treatment, dismantling and disassembly for re-cycling	2,128	2,248	3,080	8,443	5,701	21,600
Reuse, repair and maintenance of products, machinery, equipment and vehicles	4,114	6,403	19,626	17,306	4,350	51,799
Rent/lease of vehicles, machinery and equipment and household goods	1,520	3,727	4,552	8,541	1,509	19,849
<b>Total</b>	<b>7,762</b>	<b>12,378</b>	<b>27,258</b>	<b>34,290</b>	<b>11,560</b>	<b>93,248</b>
<b>Enabling</b>						
Circular logistics	36	73	86	523	110	828
Design	739	277	750	257	24	2,047
Digital technology	1,019	324	608	247	28	2,226
Networking, information and communication	3,326	811	2,657	2,902	481	10,177
<b>Total</b>	<b>5,120</b>	<b>1,486</b>	<b>4,101</b>	<b>3,928</b>	<b>643</b>	<b>15,278</b>

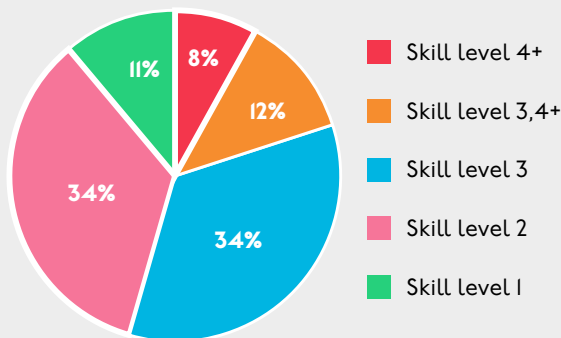
Source: Valpak analysis of ONS Annual Population Survey, 2019

## 7.5 Future skills needs in the circular economy

While it is important to note the wide range of skills and circular opportunities already available in London’s core circular and enabling circular sectors, this section links potential future job creation in the Mayor’s strategy transition scenario in Section 6, with the skills levels analysis to further understand the future skills requirements in London’s circular economy.

Linking the Mayor’s strategy transition scenario with occupation and skill levels shows (see Figure 8) that the expansion of London’s core circular economy by 2030 will likely require a substantial number (69%) of Londoners with skills at levels 2 and 3, with only 11% of additional roles being required at skills level 1.<sup>52</sup>

**Figure 8. Estimated additional core circular skills needed by 2030**

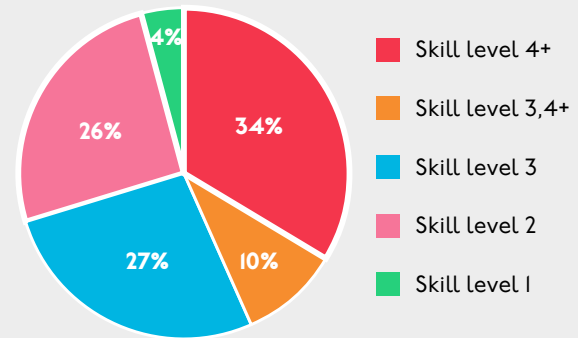


Source: Valpak analysis based on ONS Annual Population survey and BRES data, 2019

This compares to the 66% of skills required within current core circular roles at skill levels 2 and 3. This increased need for people with these skills levels over the next decade within the core circular economy points to the benefits that strategic upskilling programmes can provide, in core circular sectors such as repair and reuse.

The Mayor’s strategy transition scenario would also require significant support from enabling sectors and collaboration across the supply chain to allow the circular economy to rapidly gain traction.

**Figure 9. Estimated additional enabling circular skills needed by 2030**



Source: Valpak analysis based on ONS Annual Population survey and BRES data, 2019

Across all enabling circular businesses, the distribution of skills needed to drive the expansion of London’s circular economy are skewed toward higher skills, with 70% of the additional jobs needing skills at levels 3 and above, representing an additional 14,250 enabling circular jobs<sup>53</sup>.

## 7.6 Skills gap

The above highlights the need for skills, particularly at skill levels 2 and above, to ensure London’s circular economy is able to grow and develop at pace by 2030. The sections below summarise some of the insights shared by businesses in London that are either planning (or are in the early stages of) transitioning to circular business models and businesses that are already circular, on expected future skills requirements in the circular economy.



## 7.6.1 Businesses in the transition to circular

Through interviews with a handful of businesses transitioning to circular business models, the need for employees to have a baseline understanding of the circular economy and knowledge of how to build a business case for circular business models (i.e. making the case to board members) was emphasised, before being able to practically embed circular economy principles within their business. The importance of leadership skills is, therefore, crucial in influencing businesses and their employees to foster a supportive culture that continuously seeks opportunities to implement circular economy principles. Change management skills and the ability to coordinate across all departments in large transitioning businesses were referenced as being necessary to ensure a common understanding of circular economy and the direction of transformation.

From a more practical perspective, businesses also talked about a lack of repair skills available in the UK, resulting in the need to outsource. As London's repair and reuse sectors are expected to grow, this skills gap could pose a continued challenge for circular employers. The ability to transition roles in administration, accounting and customer services will require new knowledge on circular economy business models.<sup>54</sup>

## 7.6.2 Circular businesses

Currently circular businesses emphasised collaboration skills as key to their success, as many businesses often partner with other circular businesses or work closely with upstream or downstream businesses. The importance of skills in data analytics to enable businesses to measure environmental impacts and conduct carbon footprinting, including the need for business leaders to understand the theory of change, was also emphasised by businesses interviewed, as were technical digital design skills.<sup>55</sup>

Access to skills in interpreting government legislation and environmental policies were also deemed to be essential. As the circular economy develops, this will lead to more roles in public affairs to ensure businesses understand and anticipate how upcoming changes will impact on their businesses and how to inform change. Finally, the need for visioning was mentioned, requiring training to be able to reimagine materials and products, and develop innovative methods to incorporate secondary, pre-owned, or waste materials into products.

It's clear that a wide range of skills are needed across businesses either transitioning to become circular or which currently have circular business models. For the transition to a circular economy to be successful, hard skills, such as in design, digital and mechanical and chemical engineering, will be needed, in addition to skills to run business office functions in circular economy businesses. However, in contrast to the linear economy, a key theme from conversations (particularly in the transition phase) was the need for a collaborative approach, with systems thinking as a cornerstone. As a consequence, soft skills such as communication, networking, influencing and persuasion, leadership and problem-solving are likely to be more important for the development of the circular economy.

To successfully create the conditions needed to transition to the circular economy, the required skills identified by businesses indicate where training and reskilling actions could be immediately impactful. In particular, there will be a need for circular economy and behaviour change experts in the transition, to educate, support, and develop circular thinking skills for workers.

## 7.7 Training provision

To gain an understanding of whether the training provision available in London is sufficient to support the upskilling required for a successful transition to a more circular economy by 2030, several circular economy businesses located in London were consulted about training requirements in their businesses, a review of existing courses was undertaken and discussions were held with a handful of colleges, universities and London based training providers.

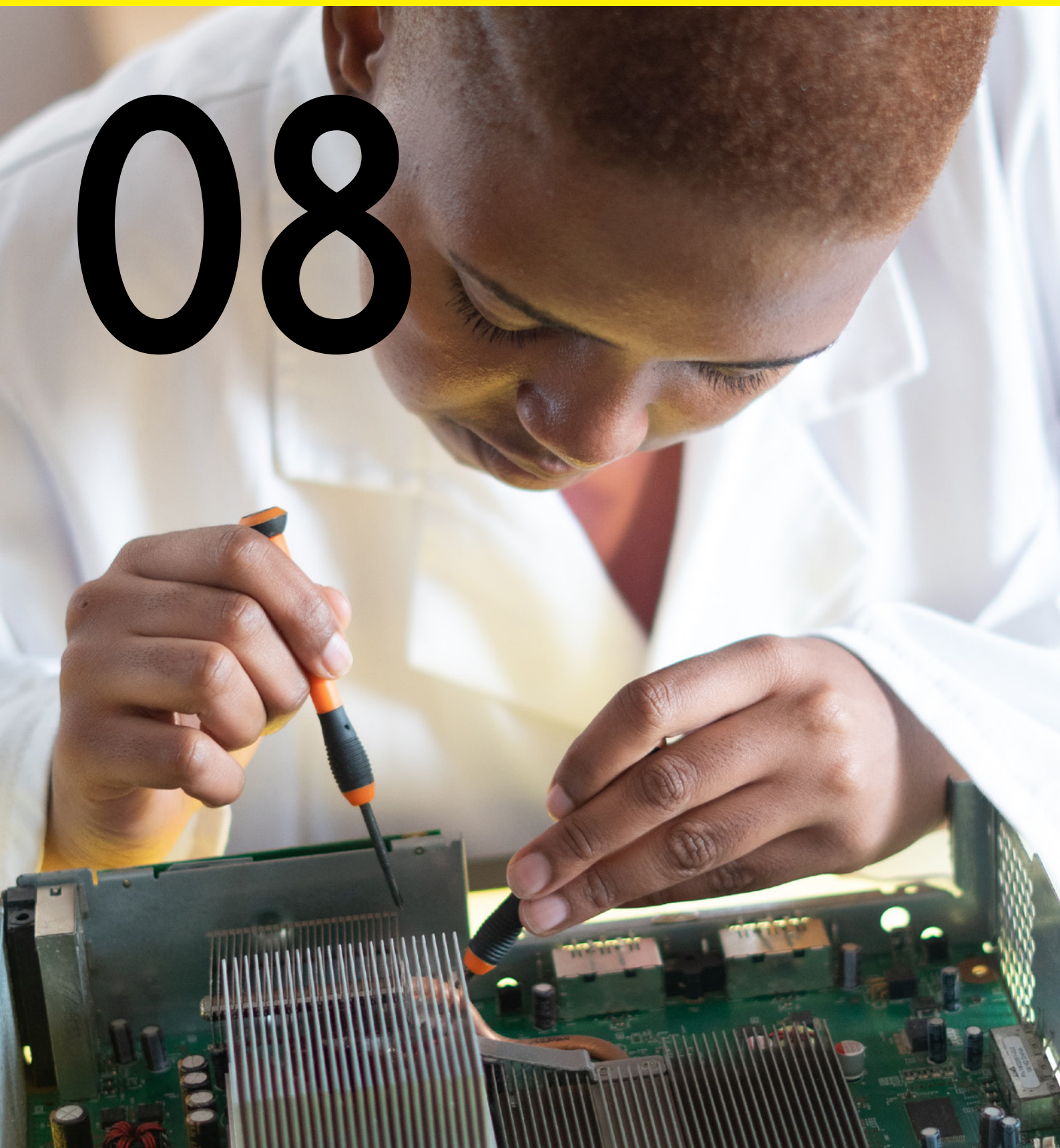
From these conversations<sup>56</sup> and a literature review of current provision, it was clearly identified that there are few options currently available for circular economy training to support London's transition to a more circular economy by 2030. Circular economy course content is limited to a few post-graduate courses and there is a general lack of relevant content within teaching in schools and colleges<sup>57</sup>. The GLA's Green Skills Adult Education provision in London report<sup>58</sup> outlines the need for more general awareness of the green economy and how, across all courses and training providers, there is a need to embed green examples in the curriculum and build awareness. This can also be applied to the circular economy to ensure Londoners are aware of the benefits of the circular economy and related job opportunities.

There is a clear opportunity related to the provision of education and training programmes on the circular economy, particularly as they can target growing sectors, such as repair and maintenance, in order to build competencies in circular economy knowledge and systems thinking. In addition to being woven into the school curriculum and across further/higher education, top-up or short refresher courses could provide opportunities to help build circular economy knowledge within businesses and avoid workers having to take time-out for training.

While it is crucial that training is targeted at young Londoners and other groups disproportionately affected by higher unemployment rates to ensure a just transition to a circular economy, it is also necessary to create upskilling programmes for those who are already working, including on-the-job opportunities. This is particularly important as there are high levels of skilled workers at NVQ 4+ across London, as shown in Section 5, who may be well-positioned to adopt or influence the uptake of circular principles within their organisations.

# Conclusion

08





# 8. Conclusion

**From this research, it is clear that on top of the substantial environmental gains that a circular economy can deliver, it also has the potential to contribute significantly to job creation and economic growth.**

The estimates of jobs in London's circular economy show that on top of growth in core circular jobs by 2030, there are expected to be substantial numbers of both enabling and indirectly circular jobs in the supply chains supporting core circular businesses, leading to a potential 284,000 additional circular jobs by the end of the decade through the Mayor's strategy transition scenario. Building on the 2019 baseline of 231,000 circular jobs, the total circular job potential would be 515,000 circular jobs by 2030. On top of the environmental and jobs benefits, this expansion of the circular economy would also create economic value, with circular economy businesses contributing a total of £24.2bn in terms of Gross Value Added (GVA) to London's economy by 2030.

Transitioning to a low carbon circular economy will require action at all levels of society, including national, regional and local government, regulators, consumers and businesses, as well as adequate support for innovation and collaboration across the supply chain. Rapid changes for businesses in transition means skills training will need to be responsive and adaptive to ensure efficient and equitable matching of skills between workers and jobs. Investment in retraining and upskilling will also be required through a mix of formal training and qualifications and skills development; this can be delivered through

on-the-job learning that can target both groups experiencing high levels of unemployment as well as staff within transitioning businesses.

Collaboration between businesses, government, and education systems will be crucial over the next decade to ensure the circular economy is well-positioned to grow and deliver the maximum number of jobs possible. With the right skills provision, and training support in place, the expansion of the circular economy in London can provide inclusive job opportunities to all Londoners.

ReLondon recognises the huge potential that transitioning to a low carbon circular economy can play in London's green recovery and through its activities and partnerships will continue to support the realisation of these. ReLondon's vision is of a future without waste, where the way we make, consume and dispose of stuff actively tackles the climate crisis and protects our planet. We will make London a global leader in sustainable ways to live, work and prosper, by revolutionising our relationship with stuff and helping Londoners waste less and reuse, repair, share and recycle more.



# Appendices

## Appendix A

Table 7. ReLondon's detailed jobs mapping

Circular Economy Activity Grouping		4-digit BRES	Description of circular activities within businesses
Reuse, repair and maintenance of products, machinery, equipment and vehicles	Core	3311	Repair of fabricated metal products
	Core	3312	Repair of machinery
	Core	3313	Repair of electronic and optical equipment
	Core	3314	Repair of electrical equipment
	Core	3315	Repair and maintenance of ships and boats
	Core	3316	Repair and maintenance of aircraft and spacecraft
	Core	3317	Repair and maintenance of transport equipment n.e.c.
	Core	3319	Repair of other equipment
	Core	4520	Maintenance and repair of motor vehicles
	Core	4540	Sale, maintenance and repair of motorcycles and related parts and accessories
	Core	9511	Repair of computers and peripheral equipment
	Core	9512	Repair of communication equipment
	Core	9521	Repair of consumer electronics
	Core	9522	Repair of household appliances and home and garden equipment
	Core	9523	Repair of footwear and leather goods
	Core	9524	Repair of furniture and home furnishings
	Core	9525	Repair of watches, clocks and jewellery
	Core	9529	Repair of other personal and household goods
	Core	9601	Washing and (dry-)cleaning of textile and fur products
Core	4779	In-store retail sale of second-hand goods	

Circular Economy Activity Grouping		4-digit BRES	Description of circular activities within businesses
Resources collection, treatment, dismantling and disassembly for re-cycling	Core	3600	Water collection, treatment and supply
	Core	3700	Sewerage
	Core	3811	Collection of non-hazardous resources
	Core	3812	Collection of hazardous resources
	Core	3821	Treatment and disposal of non-hazardous resources
	Core	3822	Treatment and disposal of hazardous resources
	Core	3832	Recovery of sorted materials
	Core	3900	Remediation activities and other resource management services
	Core	4311	Deconstruction in the built environment
	Core	4677	Wholesale of recovered resources
Rent/lease of vehicles, machinery and equipment and household goods	Core	7711	Renting and leasing of cars and light motor vehicles
	Core	7712	Renting and leasing of trucks
	Core	7721	Renting and leasing of recreational and sports goods
	Core	7722	Renting of video tapes and disks
	Core	7729	Renting and leasing of other personal and household goods
	Core	7731	Renting and leasing of agricultural machinery and equipment
	Core	7732	Renting and leasing of construction and civil engineering machinery and equipment
	Core	7733	Renting and leasing of office machinery and equipment (including computers)
	Core	7734	Renting and leasing of water transport equipment
	Core	7735	Renting and leasing of air transport equipment
Design	Enabling	7111	Architectural activities
	Enabling	7112	Engineering activities and related technical consultancy
	Enabling	7410	Specialised design activities

Circular Economy Activity Grouping		4-digit BRES	Description of circular activities within businesses
Digital technology	Enabling	5829	Other software publishing
	Enabling	6110	Wired telecommunications activities
	Enabling	6120	Wireless telecommunications activities
	Enabling	6130	Satellite telecommunications activities
	Enabling	6190	Other telecommunications activities
	Enabling	6201	Computer programming activities
	Enabling	6209	Other information technology and computer service activities
	Enabling	6311	Data processing, hosting and related activities
	Enabling	6312	Web portals
Circular logistics	Enabling	4920	Freight rail transport
	Enabling	4941	Freight transport by road
	Enabling	5020	Sea and coastal freight water transport
	Enabling	5040	Inland freight water transport
	Enabling	5221	Service activities incidental to land transportation
	Enabling	5222	Service activities incidental to water transportation
	Enabling	5224	Cargo handling
	Enabling	5229	Other transportation support activities

Circular Economy Activity Grouping		4-digit BRES	Description of circular activities within businesses
Networking, information and communication	Enabling	7810	Activities of employment placement agencies
	Enabling	8411	General public administration activities
	Enabling	8413	Regulation of and contribution to more efficient operation of businesses
	Enabling	9411	Activities of business and employers membership organisations
	Enabling	9412	Activities of professional membership organisations
	Enabling	9420	Activities of trade unions
	Enabling	1811	Printing of newspapers
	Enabling	1812	Other printing
	Enabling	5811	Book publishing
	Enabling	5812	Publishing of directories and mailing lists
	Enabling	5813	Publishing of newspapers
	Enabling	5819	Other publishing activities
	Enabling	7211	Research and experimental development on biotechnology
	Enabling	7219	Other research and experimental development on natural sciences and engineering
	Enabling	7220	Research and experimental development on social sciences and humanities
	Enabling	7311	Advertising agencies
	Enabling	7312	Media representation
	Enabling	7320	Market research and public opinion polling
	Enabling	8531	General secondary education
	Enabling	8532	Technical and vocational secondary education
	Enabling	8541	Post-secondary non-tertiary education
	Enabling	8542	Tertiary education
	Enabling	8559	Other education n.e.c.
	Enabling	8560	Educational support activities
		Indirect	

Source: ONS Standard Industrial Classification (SIC), 2007



## Appendix B

Table 8 provides a breakdown of the job numbers by sector of circular jobs in 2019 and job potential by 2030 associated with the Mayor's strategy transition scenario. Please note that these numbers are unrounded.

**Table 8. Job numbers by sector for core, enabling, and indirectly circular definitions and the Mayor's strategy transition scenario, 2030**

Type	Description	Baseline 2019	Mayor's strategy transition scenario 2030
Core	Resources collection, treatment, dismantling and disassembly for re-cycling	21,600	35,521
Core	Reuse, repair and maintenance of products, machinery, equipment and vehicles	51,800	136,126
Core	Rent/lease of vehicles, machinery and equipment and household goods	19,850	22,209
Core	<b>Total core circular jobs</b>	<b>93,250</b>	<b>193,855</b>
Enabling	Circular logistics	829	1,932
Enabling	Design	2,047	4,771
Enabling	Digital technology	2,226	5,188
Enabling	Networking, information and communication	10,177	23,719
Enabling	<b>Total enabling circular jobs</b>	<b>15,279</b>	<b>35,610</b>
Indirect	Manufacturing	3,414	7,957
Indirect	Construction	2,969	6,920
Indirect	Wholesale and retail trade	19,930	46,450
Indirect	Transportation and storage	2,975	6,934
Indirect	Hospitality	10,982	25,595
Indirect	Information and communication	3,349	7,805
Indirect	Financial and insurance activities	2,588	6,032
Indirect	Real estate activities	1,687	3,932
Indirect	Professional, scientific and technical activities	5,136	11,970
Indirect	Administrative and support service activities	8,865	20,661
Indirect	Public administration	3,783	8,817
Indirect	Education	2,634	6,139
Indirect	Healthcare	48,659	113,407
Indirect	Arts, entertainment and recreation	3,130	7,295
Indirect	Other service activities	2,182	5,085
Indirect	<b>Total indirectly circular jobs</b>	<b>122,283</b>	<b>284,999</b>
	<b>Total circular jobs</b>	<b>230,812</b>	<b>514,465</b>

## Appendix C

Table 9 shows the general nature of qualifications, training and experience that would typically be associated with posts in the major occupational groups identified in the ONS' Standard Occupation Classification (SOC2010). It also shows the NVQ skill level (4 being high skills and 1 being low skill), and examples of the types of qualifications that people working in these occupations could be expected to have gained. Qualification examples shown for skill level 4 and above are for a selection of level 5 to level 7 qualifications.

Table 9. Occupational groups, skills levels and example qualifications

Major occupational group	General nature of qualifications, training and experience for occupations by major group	Skills levels	Example qualifications
Managers, directors and senior officials	A significant amount of knowledge and experience of the production processes and service requirements associated with the efficient functioning of organisations and businesses.	4,3	Higher national diploma (HND) Degree apprenticeship Degree with honours - for example bachelor of the arts (BA) honours Bachelor of science (BSc) honours
Professional occupations	A degree or degree equivalent qualification, with some occupations requiring postgraduate qualifications and/or a formal period of experience-related training.	4	Master of science (MSc) Doctorate (PhD or DPhil) Higher apprenticeship Foundation degree Higher national diploma (HND)
Associate professional and technical occupations	An associated high-level vocational qualification, often involving a substantial period of full-time training or further study. Some additional task-related training is usually provided through a formal period of induction.	3	A level access to higher education Diploma Advanced apprenticeship Applied general AS level International Baccalaureate diploma Level 3 award
Administrative and secretarial occupations	A good standard of general education. Certain occupations will require further additional vocational training to a well-defined standard (e.g. office skills).	2	See below

Major occupational group	General nature of qualifications, training and experience for occupations by major group	Skills levels	Example qualifications
Skilled trades occupations	A substantial period of training, often provided by means of a work based training programme.	3	See above
Caring, leisure and other service occupations	A good standard of general education. Certain occupations will require further additional vocational training, often provided by means of a work-based training programme.	2	CSE - grade I GCSE - grades 9, 8, 7, Intermediate apprenticeship O level - grades A, B or C Level 2 award Level 2 certificate Level 2 diploma Level 2 ESOL Level 2 essential skills Level 2 functional skills Level 2 national certificate Level 2 national diploma
Sales and customer service occupations	A general education and a programme of work-based training related to sales procedures. Some occupations require additional specific technical knowledge but are included in this major group because the primary task involves selling.		
Process, plant and machine operatives	The knowledge and experience necessary to operate vehicles and other mobile and stationary machinery, to operate and monitor industrial plant and equipment, to assemble products from component parts according to strict rules and procedures and subject assembled parts to routine tests. Most occupations in this major group will specify a minimum standard of competence for associated tasks and will have a related period of formal training.		
Elementary occupations	Occupations classified at this level will usually require a minimum general level of education (that is, that which is acquired by the end of the period of compulsory education). Some occupations at this level will also have short periods of work-related training in areas such as health and safety, food hygiene, and customer service requirements.	1	GCSE - grades 3, 2, 1 Level 1 ESOL Level 1 essential skills Level 1 functional skills Level 1 award Level 1 certificate Level 1 diploma

Source: ONS Standard Occupational Classification (SOC), 2010

# Endnotes

1. This project has been shaped by London's key stakeholders. The analysis and conclusions have been drafted by Valpak and ReLondon who are responsible for verification and checking.
2. Green Jobs Taskforce (2021). **Green Jobs Taskforce report: Report to Government, Industry and the Skills Sector**. Sourced from: [GOV.UK website](#).
3. Central London Forward, Local London, South London Partnership and West London Alliance (2021). **Green Jobs and Skills in London: cross-London report**. Sourced from: [WPI Economics' website](#).
4. Greater London Authority (n.d.). **Referral process for Local Planning Authorities**. Sourced from: [Greater London Authority website](#).
5. Department for Environment, Food and Rural Affairs (2011). **Guidance on applying the Waste Hierarchy**. Sourced from: [Department for Environment, Food and Rural Affairs website](#).
6. Circular Online (November 2021). **COP26: To fix the climate we must fix the economy. Here's why**. Sourced from: [Circular Online's website](#).
7. WRAP, London Sustainable Development Commission, London Waste and Recycling Board, and the Greater London Authority (2015). **Employment and the circular economy: Job creation through resource efficiency in London**. Sourced from: [Greater London Authority website](#).
8. Please note that the figures may not sum due to rounding.
9. Greater London Authority (n.d.). **Green New Deal**. Sourced from: [Greater London Authority website](#).
10. Office for National Statistics, Social Survey Division (2019). **Annual Survey of Hours and Earnings**. Sourced from: [UK Data Service website](#).
11. For more information on the detailed analysis behind these scenarios please contact ReLondon.
12. Greater London Authority (2022). **Analysis of a Net Zero 2030 Target for Greater London**. Sourced from: [Greater London Authority website](#).
13. London Councils (n.d.). **Climate Change**. Sourced from: [London Councils' website](#).
14. The Green New Deal was launched in 2020. More information can be found at: [Greater London Authority website](#).
15. The London Recovery Board is jointly chaired by the Mayor of London and the Chair of London Councils. The London Recovery Board has worked since 2020 to bring together leaders from across London's government, business and civil society, as well as the health and education sectors, trade unions and the police, to oversee the long-term recovery effort. Sourced from: [London Recovery Board's website](#).
16. The Mayor of London noted in 2020 that the Green New Deal Fund supports the London Recovery Board's ambition to double the size of the green economy in London to £100 billion by 2030 to spur on job growth and tackle climate change. Sourced from: [Greater London Authority website](#).
17. London Councils' Transport and Environment Committee and London Environment Directors' Network released a joint statement in 2022 that sets out their approach to addressing climate change within and between boroughs and commits to seven key programmes that will be delivered through meaningful collaboration between boroughs, partners, residents and business community. Sourced from: [London Council's website](#).
18. Central London Forward, Local London, South London Partnership, West London Alliance, WPI Economics, and Institute for Employment Studies (2021). **Green Jobs and Skills in London: cross-London report**. Sourced from: [WPI Economics' website](#).
19. Please note that due to the narrow definition of the circular economy within the report, there will only be overlaps with ReLondon's report within 'core' circular jobs (i.e. waste management or recycling sectors).
20. ReLondon (n.d.). **Circular economy explained**. Sourced from: [ReLondon's website](#).
21. Greater London Authority (2018). **London Environment Strategy**. Sourced from: [Greater London Authority website](#).
22. Greater London Authority (2021). **The London Plan**. Sourced from: [Greater London Authority website](#).
23. The Mayor of London launched London's Green New Deal fund in November 2020. Sourced from: [Greater London Authority website](#).
24. Greater London Authority (2022). **The Mayor of London's Skills Roadmap for London**. Sourced from: [Greater London Authority website](#).
25. The Mayor has awarded funding to organisations to lead the establishment and delivery of hubs which support Londoners into good work in the green economy, creative industries, digital, health and hospitality sectors. Sourced from: [Greater London Authority website](#).
26. Office for National Statistics, Social Survey Division (2022). **Annual Population Survey, October 2020–September 2021**. Sourced from: [UK Data Service website](#).
27. Remanufacturing would be considered as a core circular economy sector, however, due to limitations of official data this has not been included in this definition. Elements of remanufacturing may be included within maintenance and repair.



28. Vertical farming and agriculture would be considered as part of the circular economy, however, due to limitations of official data this has not been included in this definition.
29. Green Alliance and WRAP (2015). *Employment and the circular economy: job creation in a more resource efficient Britain*. Sourced from: [Green Alliance website](#).
30. Circle Economy (2021). *Circular jobs monitor*. Sourced from: [Circle Economy website](#).
31. Office for National Statistics (2021). *Business Register and Employment Survey*. Sourced from: [Office for National Statistics website](#).
32. The methodology builds on GLA Economics' analysis of input-output tables for London. It is important to note that jobs in the supply chains of core circular businesses are of equal importance as they are inter-related with and cross-support core circular business activities. Circular jobs in core circular sectors are not intended to be represented as being more important than supply chain jobs that are enabling circular or indirectly circular, as these are also needed for the system as a whole to work effectively.
33. Office for National Statistics (2021). *Business Register and Employment Survey*. Sourced from: [Office for National Statistics website](#).
34. Please note that the figures may not sum due to rounding.
35. Office for National Statistics (2021). *Business Register and Employment Survey*. Sourced from: [Office for National Statistics website](#).
36. It is acknowledged that food design, food systems and their role in biodiversity and regeneration are an important part of a circular economy. However, it was not possible to identify circular jobs in these activities or make plausible estimates due to limitations within official data sets.
37. London Councils (n.d.). *Climate Change*. Sourced from: [London Councils website](#).
38. Net job creation refers to core circular jobs. For circular jobs growth in total, while it is acknowledged that posts created by growth in circular economy may be filled by inward migration, it is assumed likely given the scale of the jobs numbers in these scenarios that many posts will be filled by people switching jobs from existing posts, but that some posts may be filled by people moving out of unemployment or periods of inactivity.
39. For more information on the detailed analysis behind these scenarios please contact ReLondon.
40. Greater London Authority (2018). *London Environment Strategy*. Sourced from: [Greater London Authority website](#).
41. For more information on the detailed analysis behind these scenarios please contact ReLondon. Note that municipal waste excludes non household-like waste in commercial and industrial (C&I) and construction, demolition and excavation (CDE) sectors.
42. To determine a 2019 baseline, an average is taken from the 2016 and 2020 tonnage estimates in the GLA's waste projection published in the Mayor of London's Environment Strategy. Greater London Authority (2018). *London Environment Strategy*. Sourced from: the [Greater London Authority website](#).
43. The *London Environment Strategy* notes that the Mayor of London will keep his recycling targets under review, based on the progress of London's transition to a circular economy. This will encourage materials to be used at their highest value for as long as possible and avoid incentivising recycling over and above the more desirable options of reduction and reuse.
44. Please note that the figures may not sum due to rounding.
45. However, whilst this is used for analytical purposes, this is not to say that age, time spent in employment, soft skills and life skills are not also factors that impact on employability, but rather that this is the best data source available to act as a proxy. Not having any qualifications doesn't mean that people have no skills but people without qualifications are less likely to have favourable prospects in terms of gaining employment, switching jobs, or re-entering the workforce.
46. This figure shows the general nature of qualifications, training and experience that would typically be associated with posts in the major occupational groups identified in the ONS' Standard Occupation Classification (SOC, 2010).
47. Office for National Statistics (2021). *Annual Population Survey, Oct 2020-Sep 2021*. Sourced from: [Office for National Statistics website](#).
48. Office for National Statistics (2021). *Annual Population Survey, Oct 2020-Sep 2021*. Sourced from: [Office for National Statistics website](#).
- 49-54. For more information on the detailed analysis behind these scenarios please contact ReLondon.
55. Please note that only a handful of businesses were interviewed, and this is a summary of key points from those conversations. There will likely be more skills required across other sectors of the circular economy not mentioned here.
56. For more information on the detailed analysis behind these scenarios please contact ReLondon.
57. Ellen MacArthur Foundation (2021). *The Circular Economy in higher education: Insights from course offerings in London and New York*. Sourced from: [Ellen MacArthur Foundation website](#).
58. Greater London Authority (2022). *Green Skills Adult Education provision in London*. Sourced from: [Greater London Authority website](#).



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