

Towards a Green Jobs and Skills Roadmap for Reading

A Report by Shared Intelligence

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Executive Summary

A growing body of evidence suggests 'green jobs' are better jobs, in terms of quality and pay particularly for lower skilled workers. Green jobs may also be less at risk of automation. It is also clear that in the short term the transition to Net Zero requires thousands of jobs in construction and installation, particularly for retrofit, energy efficiency and creating electric vehicle infrastructure. In the medium to longer term, demand will likely increase for a growing number of new occupations including in low carbon services (eg low carbon finance or transport) and research and development.

Beyond the need to reduce carbon emissions to avert the worst impacts of climate change, growing the green economy is an important employment and social mobility issue for Reading. Even though Reading has a comparatively high-skilled population, with 55% of the working age population educated to NVQ4 (HE/BTEC) or higher, around one in three people are not qualified beyond NVQ2 (GCSE level), and from previous analysis we have carried out for REDA we estimate there could be 30,000 jobs (out of a total of 108,000 employee jobs) in Reading at risk of automation¹.

This work, commissioned by REDA, is intended as a starting point on a roadmap towards green jobs and skills. For that reason we have used the narrow definition of 'low carbon and renewable energy' rather than a wider 'green economy' definition. This approach has enabled us to deliver analysis more quickly using readily available Low Carbon and Renewable Energy Economy (LCREE) data from the Office for National Statistics along with projections of growth in demand for low carbon jobs developed by the Local Government Association (LGA) and research consultancy Ecuity. The benefits of this narrow approach are that the data is robust and well understood, however, the scale of the entire green economy in Reading measured using wider definitions will of course be much larger.

Using this approach, the projections from the LGA/Ecuity model show that even with a 'do nothing' approach, national economic and policy drivers related to Net Zero could lead to a 4.8x increase in demand for low carbon jobs by 2050, equal to around 2,800 jobs in Reading. Although the rate of growth is noteworthy, the number of jobs in absolute terms is small compared to the number of local workers in whose jobs might be at risk of automation, and the number of residents without a BTEC or university degree.

This report therefore goes further, to consider opportunities for a *proactive* approach by REDA and its partners to deliver a much larger number of green jobs. To inform such an approach we looked in more detail at the low carbon 'job density' of different sectors and considered opportunities in Reading's largest sectors; 'information and communication' (ie,

¹ Based on analysis carried out for REDA in 2019 using PwC estimates for risk of automation applied to Reading jobs by industry sector (employers) and occupation sector (workers)

IT, software, telecoms) and 'professional, scientific and technical services' (ie, law, accountancy, and 'white-collar' engineering).

Focusing on Reading's most dominant sectors where it has locational advantage, along with sectors with the greatest low carbon 'job density' we recommend four priority sectors as the focus of a proactive approach: electricity and gas, construction, information and communications, and professional and scientific.

We also looked at the short and long-term trajectories of growth in demand for jobs, along with other evidence about how the UK's green economy might evolve. This points to short term growth in demand for jobs in retrofit and energy efficiency. Over the medium to longer term however, growth in demand for jobs in low carbon services (eg low carbon finance or transport) will likely be the biggest driver of low carbon jobs growth overall, more than for low carbon heat or energy efficiency.

Taken together we propose the following framework for action across the four priority sectors which is both short and long term, and both reactive and proactive:

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As we have explained, our analysis looks only at the low carbon and renewables economy, the 'green economy' is a much broader definition and would yield larger numbers. However, even when looking only at jobs in low carbon and renewables we have set out an evidence-based roadmap for achieving 5,600 low carbon jobs in Reading by the year 2050 which is double the LGA/Ecuity 'do nothing' projections, and ten times the number of LCREE jobs in Reading today.

Postscript: a transformational goal

As a postscript, we recently were able to access an alternative set of sectoral employment data based on a very different methodology to LCREE data. It defines Reading's 'Net Zero' sector based on real-time data harvested from multiple online sources². This puts the current scale of 'Net Zero' activity in Reading *today* at 4,200 jobs (much higher than LCREE data). Applying the same multiple of growth in demand for jobs as the LGA/Ecuity projections (4.8x) would indicate 20,000 Net Zero jobs by 2050. Going further and applying our higher multiple of 10x based on a proactive approach, would indicate 42,000 Net Zero jobs by 2050, more than one-third the total number of local jobs in Reading today. For now this can only exist as a What If? What if 42,000 or one-third of all jobs in Reading were in Net Zero? With the benefit of more intelligence and data REDA could potentially develop a goal of this magnitude. Such a goal would be transformational for local residents, especially those with lower skills, and would also make Reading an outsized contributor and leader within the national Net Zero economy.

² The data referred to here comes from colleagues at The Data City who apply supervised machine learning to realtime data from multiple live sources to create 'real-time industry categories'. They applied a Reading-level filter to their 'Net Zero' real-time definition. Preliminary results indicate 4,200 sector jobs across 125 employers with the two largest employers identified as Enerveo (EV infrastructure) and SSE (power supply), followed by a long tail of SMEs.

1. Introduction

- 1.1 In the context of the climate emergency, the UK has set out its Net Zero Strategy to become carbon neutral by 2050. This strategy, published in 2021, builds on the Government's 10 Point Plan for a Green Industrial Revolution. The need to transition to low carbon industries, invest in green technologies, and adapt the labour market is clear; however, the implications in terms of local economic policy and the most effective local actions are not as well understood. In many places work is being undertaking to formulate local plans of action to support local economies in transition to Net Zero. As such, local authorities and other partners are now key actors in the delivery of Net Zero and the wider green economy. In this sense, it is necessary to understand how green jobs are defined, their key sectors and characteristics, and the role local actors have in shaping their economies to support the Net Zero goal.
- 1.2 In August 2022 we were commissioned by REDA, Reading's Economy & Destination Agency to undertake research to inform a green jobs and skills plan for Reading. REDA is the economic development agency for Reading. Although independent from Reading Borough Council its advice and analysis is central to the council's decision-making on the local economy. Our brief was to help REDA gain greater insight into local green jobs now and in the future, and to begin developing a roadmap for action.
- 1.3 In addition to addressing the climate crisis, investing in greener jobs and skills has broader economic benefits. Promoting a transition of the local labour market towards green jobs may contribute to boosting earnings and securing longer term employment. Research by LSE³ suggests greener jobs are higher quality and better paid, particularly for lower skilled occupational groups. In addition, green jobs may be less susceptible to automation. The research also argues that in the short term, the transition to Net Zero will require thousands of jobs in construction and installation, particularly for retrofit, energy efficiency and creating electric vehicle infrastructure. In the medium to longer term, demand will likely increase for new kinds of occupations including in R&D and new technologies.
- 1.4 Access to good secure jobs is an important issue for Reading. Even though Reading has a comparatively high-skilled population, with 55% of the working age population

³ "<u>Are 'green' jobs good jobs?</u>", LSE (2021)

educated to NVQ4 (HE/BTEC) or higher, around one in three people are not qualified beyond NVQ2 (GCSE level), and from previous analysis we have carried out for REDA we estimate there could be 30,000 jobs (out of a total of 108,000 employee jobs) in Reading at risk of automation⁴.

1.5 To understand green jobs and skills and establish initial steps of a roadmap for action, this work analyses ONS' Low Carbon and Renewable Energy Economy (LCREE) data and relevant literature. It also draws on input from REDA staff and close partners and stakeholders. This report provides an overview of Reading's economy and employment base, followed by an analysis of LCREE data and the identification of key challenges. We then present a roadmap and conclude with a discussion of next steps and the need for further intelligence gathering through deep dives.

⁴ Based on analysis carried out for REDA in 2019 using PwC estimates for risk of automation applied to Reading jobs by industry sector (employers) and occupation sector (workers)

2. Our scope - 'green' Vs 'low carbon'

- 2.1 One of the most important points to note about 'green jobs' and the 'green economy' is the difficulty of defining what these terms mean and the choices which have to be made about which data or approach to use. The methods we have used here were chosen because they use data which although not perfect, is robust, widely used, and well understood.
- 2.2 Although our initial brief was to look at green jobs and skills, we quickly agreed with REDA to focus specifically on low carbon and renewables. This narrower definition, using Low Carbon and Renewable Energy Economy sector data (LCREE) from the ONS, was driven by practical rather than strategic considerations. We considered other approaches which would have broadened our scope but ruled these out largely due to the need for this work to be done quickly as a first step.

Which parts of the 'green economy' does the LCREE classification cover?

- 2.3 LCREE is a new classification model from the ONS for identifying firms and organisations involved in low carbon activity which is defined as "*economic activities that deliver goods and services that are likely to help the UK generate lower emissions of greenhouse gases, predominantly carbon dioxide*". It estimates the number of low carbon firms and jobs in each industry sector based on the ONS' LCREE survey, which targets 24,000 businesses nationwide.
- 2.4 LCREE data has been used by the Local Government Association (LGA) and research consultancy Ecuity to create a model and online tool⁵ which generates projections of growth in demand for low carbon jobs assuming the UK gets on track to meet Net Zero by 2050. The online tool provides snapshots of jobs and other economic data by local authority area; as a result LCREE data is widely used and understood within the local economic development sector. Our main sources of data have been LCREE data outputs from the online tool, combined with raw LCREE data and business register data accessed via ONS.

⁵ <u>https://www.local.gov.uk/local-green-jobs-accelerating-sustainable-economic-recovery</u>

- 2.5 The main advantage over other types of data is that LCREE data can be analysed at a local level. Another advantage of LCREE is that it captures activity by business who undertake some but not all their work in LCREE activities. For example a construction firm doing a small amount of work with low-carbon buildings would be captured by the survey, but their non-LCREE activity would be excluded.
- 2.6 The main caution over LCREE data is that it exclude five sectors on the grounds they contain only small numbers of relevant jobs: Accommodation and food service activities (sector I), Financial and insurance Services (sector K), Public administration (sector O), Health and social work (sector Q), and Arts, entertainment and recreation (sector R). It is important to note that these sectors account for around 30,000 jobs in Reading and several are significant in the local economy. There are also activities which might be considered within the broader green economy but which also do not show up in LCREE because they are 'green' but not directly related to low carbon and renewables eg, green finance, green tourism, recycling, and biodiversity protection.
- 2.7 The LCREE classification differs from the Environmental Goods and Services Sector (EGSS) definition which is also measured by ONS⁶; EGSS is a much broader definition of the 'green economy' but it cannot be analysed at small geographic levels.
- 2.8 Another alternative data source would have been the O*Net data which originates in the US but has been mapped to UK sectors and data by the Greater London Authority. Not only does O*Net provide a broader definition of the 'green economy', it also differentiates between skills demands which relate to up-skilled existing occupations, and new occupations altogether. The downside of using O*Net is that the complexity of the data would have entailed a larger project.

⁶ The EGSS definition is much broader and follows international definitions of the green economy. The limitation of EGSS data however is that the data is only available at a national level, making it unsuitable for local analysis such as this.

Use of data for this report and limitations

- 2.9 We have used conventional ONS business register data to create comparisons with Reading's local economy as a whole in terms of jobs, GVA and other metrics. In taking forward the information and recommendations outlined in this report REDA will need to look more deeply into the exact nature of occupations in different sectors, especially in the service sector which accounts for most of Reading's economy. For example how many of the very large number of technology jobs in Reading are (or could become) connected with the production of green computing or green software? Similarly, what is the state of green practice among Reading's hotel operators and festival organisers?
- 2.10This work is intended as a starting point, to begin developing a roadmap for action. As REDA and other partners in Reading take this agenda forward they will need to continue building understanding and intelligence about the local green economy. This can be done by gathering more first-hand knowledge through relationship-building and partnerships, and by seeking data which provides different perspectives.

3. The Reading economy

Shape of the local economy by total value-added

3.1 Reading is a highly productive, knowledge-based economy. Its most important industries in terms of Gross Value Added (GVA) are:

- Information and communication which includes employers involved in IT and software, telecoms, and media.
- Professional, Scientific and Technical Services which includes law and accountancy firms, 'white-collar' engineering activities, and advertising.
- Human health and social work which includes hospitals, medicine, and social care.

Figure 1. GVA by sector at current prices, 2020 (Millions of Pounds)⁷



Source: Regional gross value added (balanced) by industry, ONS 2022

⁷ GVA Data at local authority level groups sectors A, B, D, E together (Agriculture, mining, electricity, gas, water and waste) on account of their small scale individually

Shape of the economy by employment

2.11 In terms of employment, Information and communication is also Reading's largest sector, comprising about 16% of all employment in the Borough, far higher than in the rest of the Southeast. It is followed by Health, and Professional, Scientific and Technical Services, both with 13% of total employment.

Figure 2. Jobs by industry as a percentage of all jobs, Reading and South East



Source: Business Register and Employment Survey, ONS 2020

Location quotient by employment

- 3.2 Location quotient (LQ) measures the extent to which each sector is comparatively weak or strong within the local employment base (against an index of 1 for UK average). Analysis of LQ for Reading shows high levels of specialisation in Information and communication, which contributes almost four times as many jobs to the local economy compared to the GB average. This is followed by Water and Waste, Energy – which are strongly over-represented, although they account for only a very small number of jobs. Professional and Scientific Services is also over-represented and is a large sector in terms of jobs and GVA. This indicates Reading's clustering and competitive advantages in both large and specialist sectors.
- 3.3 Sectors with LQ values of *less than* 1 are areas where Reading has fewer jobs than the national average. These sectors might still provide large number of jobs in absolute terms (eg Human health, and Wholesale and retail, are large employers locally) but there are comparatively fewer jobs in those sectors than in other places.

Figure 3. Reading's location quotient for employment



Source: Business Register and Employment Survey, ONS 2020

4. LCREE jobs in Reading

LGA and Ecuity LCREE projections 2030 and 2050

- 4.1 Data from LCREE has been used by the Local Government Association and Ecuity to create a model which projects growth in demand for low carbon and renewables jobs based on the assumption the UK gets on track to meet Net Zero by 2050. Growth is assumed to result from sustained national policy, regulation, and investment to meet Net Zero; an assumption which must obviously be viewed cautiously. The LGA/Ecuity projections are based on LCREE data which means they are focused on jobs in low carbon and renewables and do not include some of Reading's largest sectors (eg Human health and Public administration). However, even within the relatively narrow scope of LCREE the data projects that by 2030 Reading could have 1,635 low carbon and renewables jobs⁸, around three times the 590 LCREE Reading jobs which existed in 2020. By 2050, this would be 2,816 jobs almost five times the number of jobs in 2020. Jobs in electricity, heat and energy efficiency are the largest contributor to the total, but the fastest growth in demand is projected to be for jobs in low carbon services (eg low carbon finance or transport) with an eight-fold increase projected between 2020 and 2050⁹ (from 67 jobs in 2020 to 519 in 2050).
- 4.2 Figure 4 shows the LGA/Ecuity projections for 2030 and 2050 along with our own estimate of comparable jobs in 2020 based on LCREE data. These are shown in LCREE sector categories.



Figure 4. Estimated number of LCREE jobs in Reading by sector, 2020, 2030 and 2050

⁹ When ONS created the 5 LCREE sectors they were not directly mapped to SIC codes; they cut across multiple traditional industry classifications. Low Carbon Services are primarily located in SIC sector "M" Professional, scientific and technical Activities.

⁸ Local green jobs – accelerating a sustainable economic recovery, LGA and Ecuity 2021

Low-carbon services	67	185	519
Low-carbon heat	170	472	710
Low-carbon electricity	124	344	782
Low emission vehicles & infrastructure	57	157	274
Energy Efficiency	156	431	455
Alternative fuels	17	46	75
Total	590	1,635	2,816

Source: Calculations based on ONS raw LCREE data and LGA/Ecuity projections, 2021

Translating this back into conventional ONS sectors

- 4.3 To enable easier read across to the more familiar ONS standard industry classifications we have taken the sectoral LCREE data and apportioned this to ONS standard industry classifications for Reading (as indicated by the most recent ONS business data) to show the LCREE projections for Reading in terms of the more familiar industry classifications.
- 4.4 Table 1 shows the "Professional, scientific and technical activities" sector, in which most of the "low carbon services" LCREE jobs are located, is projected to be the fastest growing area of demand for LCREE jobs. By contrast, "Electricity, gas, steam and A/C" provide the highest number of LCREE jobs in 2020, but are projected to fall down the rankings by 2030 and 2050.

Table 1.	I CREE I	projections f	or Reading	in terms o	f conventional	industry	classifications
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LCREE jobs in Reading by conventional ONS industry category	Estimated LCREE jobs in Reading 2020	Estimated LCREE jobs in Reading 2030	Estimated LCREE jobs in Reading 2050
A Agriculture, forestry and fishing	0	1	2
B Mining and quarrying	0	0	0
C Manufacturing	60	145	227
D Electricity, gas, steam and air conditioning supply	<mark>164</mark>	<mark>267</mark>	<mark>482</mark>
E Water supply; sewerage, waste management	26	27	38
F Construction	<mark>121</mark>	<mark>453</mark>	<mark>635</mark>
G Wholesale and retail trade	28	43	48
H Transportation and storage	1	2	4
J Information and communication	12	28	29
L Real estate activities	0	0	0
M Professional, scientific and technical activities	<mark>155</mark>	<mark>610</mark>	<mark>1,221</mark>
N Administrative and support service activities	21	58	125
P Education	0	2	5
S Other activities	1	0	0
All	589	1,635	2,816

The density of LCREE jobs by ONS industry classification

- 4.5 We have also looked at "LCREE job density" in other words, how dominant are LCREE jobs in each sector? Table 2 shows Electricity, gas, steam and A/C has the highest LCREE job density of all (these are likely to be jobs in for bioenergy, and energy monitoring, saving and control systems).
- 4.6 In terms of absolute job numbers three sectors make up most of the 590 LCREE jobs currently in Reading: (1) Electricity, gas, steam and air conditioning; (2) Construction; and (3) Professional, scientific and technical. While these three sectors between them account for most of Reading's LCREE jobs, they result from very different maths. Electricity and gas has very high LCREE job density, but with comparatively few jobs in Reading, whereas Professional, scientific and technical has a high job count but a low LCREE density. The Construction sector lies in the middle. Yet all yield similar numbers of jobs in absolute terms. These different characteristics point to different opportunities in relation to green jobs and skills.

Sector	LCREE job density	Current total jobs in Reading	Estimated LCREE jobs in Reading
A Agriculture, forestry and fishing	0.14%	225	0.3
B Mining and quarrying	0.20%	20	0.0
C Manufacturing	3.01%	2,000	60.1
D Electricity, gas, steam and air conditioning supply	13.09%	1,250	163.6
E Water supply; sewerage, waste management	1.15%	2,250	26.0
F Construction	4.83%	2,500	120.8
G Wholesale and retail trade	0.22%	13,000	28.0
H Transportation and storage	0.02%	4,000	0.8
J Information and communication	0.07%	18,000	12.3
L Real estate activities	0.02%	1,750	0.3
M Professional, scientific and technical activities	1.03%	15,000	155.2
N Administrative and support service activities	0.17%	12,000	20.5
P Education	0.00%	7,000	0.3
S Other activities	0.07%	1,500	1.0
All	0.98%	80,495	589.2

Table 2. LCREE Job density and estimated LCREE Jobs in Reading (red denotes higher LCREE density)

Source: Calculations based on LCREE data and Business Register and Employment Survey, ONS 2020 – the 80,495 total jobs number figure is lower than actual total jobs in Reading because LCREE excludes Accommodation and food, Financial and insurance, Public administration, Health and social work, and Arts, entertainment and recreation

Observations on individual sectors of interest

- 4.7 Electricity and gas has the highest LCREE job density: although this is the highest LCREE job density sector, it is also one of the smallest sectors nationally. ONS business data indicates a small number of energy sector jobs in Reading, (approximately 1,250) even though the location quotient is high. But the very high LCREE job density means that if total job count grew then a high proportion of those would be low carbon jobs; just eight new jobs in this sector are needed to generate one additional LCREE job. This is a sector where expanding the employment base only a little, will very likely create a strong flow of green jobs. Even on a national scale this is a very small sector in employment terms, but that said, Reading is home to some of the largest players. This creates a realistic opportunity to attract new inward-investing electricity and gas companies in order to grow the sector and or a cluster of supply chain companies. We also heard anecdotal evidence from REDA that the sector may be larger than ONS business register data suggests, and this possible disconnect between ONS data and reality on the ground is worth further investigation.
- 4.8 **Construction has the second highest LCREE job density:** although high in LCREE job density this sector presents a complicated picture. The LCREE jobs hotspots in construction relate to energy efficient lighting and other products, renewable heat, and energy monitoring. Many of these jobs relate to retrofit and adaptation ie one-off transition investment. This is a sector where there may be short-term spikes in demand for skills, which provide opportunities for older workers to re-train.
- 4.9 But we also need to consider that construction is a sector dominated by a narrow segment of workforce with poor progression for workers who are younger, female, or non-White: only 12% of the workforce are female (lower on site), 5-7% of the workforce are BAME (1% in senior roles), 10% are aged between 19 and 24¹⁰.
- 4.10 However, there are new higher value adding jobs on the horizon which are not about transition and retrofit of buildings ie, post Net Zero. These will require new skills, capabilities, and mindsets for example creating procurement models with different value profiles, designing processes which build-in reuse, and developing digital twin/replica technologies¹¹. This may create a parallel and very different set of

¹⁰ Special report of diversity and inclusion, Chartered Institute of Building, 2021

¹¹ Four Futures One Choice, Centre for Digital Built Britain at University of Cambridge, 2021

opportunities in skills terms for longer-term skills-building and cluster-building focused on the next generation of workers.

- 4.11 Information and communication is the biggest and most distinct local industry with strong positive location quotient: the high LQ reflects the importance of this sector (which includes IT and software, telecoms, and media) as the most job-dense and value-adding to Reading's economy, and the sector where Reading has the clearest competitive advantage over other places. However, the percentage of LCREE jobs within it is tiny with only one LCREE job for every 1,400 jobs in the sector. The data indicates that currently those LCREE jobs which do exist in this sector are most likely to be in very niche areas of energy monitoring, saving, and control systems. The sheer size of the sector however means that any increase in LCREE jobs simply due to the scale of the sector.
- 4.12 Again it is worth noting that LCREE is a very narrow definition and does not cover important growth areas such as green software engineering. This is particularly relevant given the speed and breadth of innovation in the Information and communication sector. Given the scale of employment in this sector in Reading, its importance to the local economy, and the presence of global market leaders, this area warrants deeper exploration to look at the potential for building low carbon and other green jobs which the LCREE data may not pick up. These opportunities could be developed through targeted marketing and relationship building with inward-investing companies in these fields.
- 4.13 Professional, Scientific and Technical Services is projected to generate the second largest number of LCREE jobs: according to ONS business data this sector is currently the second largest in Reading for employment even though LCREE job density is only 1%. The high absolute LCREE job count is due (as with Information and communication) to sheer scale. When we look ahead however to 2030 and 2050, this becomes *the largest* sector for jobs in low carbon and renewables due to its very high predicted rate of growth in demand. That demand comes from predicted growth in "local carbon services" which includes:
 - Low carbon financial and advisory services
 - Low emission vehicles and infrastructure

- Bioenergy
- 4.14 This sector is by far the most important for low carbon and renewables jobs in the medium to long term, and potentially for the wider green economy. Opportunities here could be unlocked and developed even further through active partnerships with Reading employers and ECITB.

5 Developing a roadmap for green skills

What problems are we trying to solve?

- 5.1 Why is a roadmap needed and what problem is it intended to solve? In simple terms the aim is to have a practical plan both to contribute to the UK's 2050 Net Zero goal nationally, and to create jobs and skills opportunities locally. We also know that green jobs can offer higher quality and better paid careers, especially for lower skilled and lower earning workers. The growth of low carbon jobs therefore helps address existing employment, skills and social mobility challenges:
 - The skills of many of Reading's non-graduate workers do not enable them to access good jobs
 - Reading employers face difficulties finding workers with the skills they need
 - Some high demand skills have insufficient training options available
- 5.2 The growth of low carbon jobs also provides opportunities around new and emerging issues:
 - Responding to demand for new occupations with short (transitional) and long term (post Net Zero) lifespans
 - Shaping demand where Reading has a head start through the presence of larger than average sectors, market leaders and innovators
- 5.3 While this analysis makes a start, the roadmap will also require more intelligence gathering through deeper dives into specific sectors combining data with discussions with key players. These will be needed to understand the detail of what skills are needed, which are easy or hard to attract, what roles education and skills providers are playing or could play, what plans are afoot, what is the experience of local people (current workers and the next generation), and what can be gained through co-operation and partnership.

Devising a roadmap

5.4 In devising a roadmap we considered findings from our own national research into levers available to an organisation such as REDA with its partners especially the local authority around Net Zero¹²:

¹² "Road to zero carbon", Shared Intelligence for Friends of the Earth and Ashden, 2022

- Increasing opportunities for people from diverse backgrounds
- Developing an evidence base and keeping it current
- Strengthening skills and knowledge across partner organisations
- Working across local anchor organisations to stimulate demand
- Using the evidence base and dialogue to take advantage of funding opportunities.

5.5 We also considered important questions raised by our analysis:

- How do we balance action to meet immediate and short term needs with action now to prepare for 10 and 30 years' time?
- How do we account for the pyramid shape of green skills ie it is not the case that some people will need green skills and others will not, rather everyone needs to develop basic green skills, and a smaller number need advanced green skills?
- How do we create opportunities for people at different life stages? For example an SME garage owner nearing retirement may not want to invest (in equipment or training) to transition from petrol/diesel vehicles to electric, but another business owner might see it as a good investment?
- What opportunities are there to work with schools as a form of economy-wide succession planning? For example how do we inspire today's Year 7s, who will be starting start work in 2030, to pursue careers which are on the fringe today but will be at the heart of a post Net-Zero economy?
- How do we respond to short-term spikes in demand in areas like retrofit, balanced with proactive steps on longer-term opportunities like green computing?
- 5.6 To address these challenges we suggest a framework for action which considers both short-term and long-term, and both proactive and reactive actions. This framework (Figure 5) could help REDA cover all four corners, it could also show whether the overall portfolio of action is balanced or skewed.



Figure 5. Framework for action in four key sectors:

Applying the framework to create a roadmap

- 5.7 Electricity and gas (reactive and short-term): This is an obvious case for a reactive and short-term approach. This sector has high LCREE job density and strong demand from employers for skilled trades for retrofit, driven by national policy, regulation and investment. These jobs are well-suited to mid and late-career workers who are attracted to re-training to exploit the spike in demand. It may also be possible to ride successive waves of retrofit and adaptation. This points to working with adult learning providers and trade bodies to stay a step ahead as demand grows or changes.
- 5.8 Even a reactive approach like this could deliver more LCREE jobs by streamlining skills and training and increasing the supply to employers. This could mean a 25% increase in LCREE jobs by 2050 against the LGA/Ecuity projections from 482 to around 550 LCREE jobs.
- 5.9 **Construction (reactive and long-term):** While Reading will want to ensure short-term demand for LCREE jobs in Construction benefits local residents and provide

opportunities for older workers to re-train (similar to Electricity and gas), the strategic approach could focus on longer-term opportunities for new jobs in a post Net Zero construction sector. There are also positive signs the construction sector in the coming decades will be more diverse with more opportunities for women and BAME workers and provide new careers which cut across skilled trades and advanced technology. While this is an area likely to generate growth in LCREE jobs it is not a sector where Reading has particular locational strength. It could therefore be suited to a longer term strategy which 'leapfrogs' short term skills needs (which can be met by firms from outside the area with their own workers) and instead focus on a 'succession planning' with trade organisations, schools and education partners to respond to future needs to create the next generation of construction skills via schools and the STEM curriculum.

- 5.10 A realistic ambition for Construction would be to achieve double the LGA/Ecuity projection of LCREE jobs in the sector by 2050 ie, 1,200 1,300 LCREE jobs by 2050.
- 5.11 REDA should also look at the extent to which current construction projects bring in external labour ie instances with little scope to support recruitment of local labour. There may also be opportunities for short term initiatives linked to low carbon construction including college courses, or local industry-led initiatives (with developers and builders).
- 5.12 Information and communications (proactive and long-term): A high impact opportunity is to attempt to increase the proportion of low carbon jobs in Reading's largest and uniquely dominant sector – Information and communication. This would be a long-term initiative requiring greater knowledge of Reading's major sector employers and the wider green digital landscape. But this could reveal opportunities not just in the niche sub-sectors identified by LCREE (energy monitoring, saving, and control systems) but in green and low carbon software, data centres, or telecoms. We know green digital technology R&D is accelerating and will play a major role in Net Zero. This is another area where longer-term initiatives could be formed with schools, for example current Year 7 pupils who will enter the job market in 2030 , inspiring and educating them about new occupations and careers and what they can do to get there. This could be part of wider action in Reading to boost school attainment and support social mobility.
- 5.13 With 18,000 local jobs in Reading's Information and communication sector, getting LCREE job density up to just 5% of the total would equate to 900 LCREE jobs by 2050.

- 5.14 Professional, scientific and technical (proactive and short-term): According to the LGA/Ecuity projections this is the big one the second largest sector with huge projected growth in demand for workers in low carbon services starting now. Action will require better intelligence about the activities and future plans of local employers to understand where in this large sector LCREE and other green jobs are located; are they in accountancy firms, engineering, somewhere else? But the scale of this sector within Reading's economy and the presence of global market leaders e.g. provides a major opportunity for impact.
- 5.15 Could the trajectory be increased by working proactively with local employers to double the LGA/Ecuity projection to 2,400 2,500 LCREE jobs by 2050?

Towards a roadmap

5.16 Table 3 shows the potential effect of these proposed actions together, covering proactive and reactive, short-term and long-term. This potential 'roadmap' shows it may possible to double the number of LCREE jobs in Reading by the year 2050 against the LGA/Ecuity projections, to almost ten times the number of LCREE jobs that exist in Reading today.

UK LCREE Jobs	LGA/Ecuity projection - 2020	LGA/Ecuity projection - 2030	LGA/Ecuity projection - 2050	Green jobs roadmap - 2050	Action
A Agriculture, forestry and fishing	0	1	2	2	No intervention
B Mining and quarrying	0	0	0	0	No intervention
C Manufacturing	60	145	227	227	No intervention
D Electricity, gas, steam and air conditioning supply	164	267	482	543	Engagement with colleges/ECITB to streamline retraining
E Water supply; sewerage, waste management	26	27	38	38	No intervention
F Construction	121	453	635	1,268	More homegrown workers in post Net Zero occupations (colleges)
G Wholesale and retail trade	28	43	48	48	No intervention
H Transportation and storage	1	2	4	4	No intervention
J Information and communication	12	28	29	900	Increase green job density to 5% by 2050 (employers, recruiters)
L Real estate activities	0	0	0	0	No intervention

Table 3. Impact of suggested actions

M Professional, scientific and technical activities	155	610	1,221	2,443	Double the trajectory through partnership with employers (ECITB)
N Administrative and support service activities	21	58	125	125	No intervention
P Education	0	2	5	5	No intervention
S Other activities	1	0	0	0	No intervention
All	589	1,635	2,816	5,602	Double number of LCREE jobs against projections

5.17 The numbers shown here relate only to jobs in low carbon and renewables. As we have explained, the 'green economy' is a much broader definition and harder and more time-consuming to quantify. However, we recently were able to access an alternative set of sectoral employment data based on a very different methodology to LCREE data¹³. It defines Reading's 'Net Zero' sector based on real-time data harvested from multiple online sources. This puts the current scale of 'Net Zero' activity in Reading today at 4,200 jobs (much higher than LCREE data). Applying the same multiple of growth in demand for jobs as the LGA/Ecuity projections (4.8x) would indicate 20,000 Net Zero jobs by 2050. Going further and applying our higher multiple of 10x based on a proactive approach, would indicate 42,000 Net Zero jobs by 2050, more than onethird the total number of local jobs in Reading today. For now this can only exist as a What If? What if 42,000 or one-third of all jobs in Reading were in Net Zero? With the benefit of more intelligence and data REDA could potentially develop a goal of this magnitude. Such a goal would be transformational for local residents, especially those with lower skills, and would also make Reading an outsized contributor and leader within the national Net Zero economy.

¹³ The data referred to here comes from colleagues at The Data City who apply supervised machine learning to real-time data from multiple live sources to create 'real-time industry categories'. They applied a Reading-level filter to their 'Net Zero' real-time definition. Preliminary results indicate 4,200 sector jobs across 125 employers with the two largest employers identified as Enerveo (EV infrastructure) and SSE (power supply), followed by a long tail of SMEs.

6 Next steps

6.1 This work was intended to be exploratory and enable REDA to make a start in terms of understanding the issues and the potential for action. It now needs to be taken forward and we suggest several next steps.

Does REDA agree with this analysis and roadmap?

- 6.2 The first step is to reflect on this analysis and the roadmap for action in four sectors, and decide with partners if you agree (this is a question for REDA, its skills for growth group, and green jobs partners).
- 6.3 The following steps are intended to be taken in parallel.

Keep watching the horizon

6.4 It is important to keep monitoring the data and other developments around green jobs and economy in this fast-developing landscape. REDA should be asking: What new studies or data or become available from LCREE or other sources? Are there developments or pivots in Government Net Zero policy, regulation and investment which might drive change or put the focus on particular sectors?

Deep Dives

- 6.5 Three of the four key sectors we identify would benefit from a deeper dive because in these sectors the LCREE and LGA/Ecuity data only takes us so far. More data, and first-hand intelligence from discussions with key players is needed. The areas we suggest as priorities for deep dives are:
 - Professional, scientific and technical to understand what kinds of low carbon services activities take place in Reading and to test the LGA/Ecuity assumptions around high future growth (this could begin through discussions with ECITB).
 - Electricity and gas to understand whether there are more local jobs in total than the 1,250 seen in the ONS and LCREE data (this could be explored first with the largest employers eg SSE/Enerveo).
 - Information and communications to understand whether there are low carbon or other green jobs within this large employment sector which are *not* captured in LCREE data due to its narrow scope in particular in green computing and software (this could be explored with any or all of: Oracle, Microsoft, Egnyte, O2, Virgin, Ericsson, Vodafone, Sky, Positive Computing, TVP, Verizon, Austin Fraser Recruitment).

6.6 A deep dive approach would consist of direct discussions with local employers and seeking alternative sources of data on firm and job count.

Engaging with partners

6.7 Engagement with partners has been vital to this work so far and should be maintained over the coming months by producing workplans grouped by sector or other objectives which involves REDA and partners (including ECITB, Activate Learning College, New Directions and the LEP on information and communication, with Education and Business Partnership on schools).

Build relationships with major employers and anchor institutions

- 6.8 Beyond any deep dives much can also be gained by acquiring more intelligence from local employers across all of the green economy. Reading is home to global market leaders many of whom will be actively developing their own green economy actions for their own products and services (eg energy companies and firms involved in EV). Other employers will be involved in the green economy in an advisory or research capacity (eg the likes of PwC and KPMG). Partnerships with these employers could unlock new opportunities around training, apprenticeships, market intelligence, and know-how.
- 6.9 It would also be useful to ask employers in Reading who are in the sectors *outside* the LCREE definition whether they are engaged in activities which fit the wider definition of 'green jobs' ie the EGSS and international definitions¹⁴. This could be done using a simple checklist based on the EGSS or international definitions of 'green jobs' and 'green economy'.
- 6.10REDA manages the two Business Improvement Districts (BIDs) in the town centre one of which is specifically a commercial BID and home to a number of global companies in the sectors identified in this report. Initial discussions conducted by REDA have revealed that some of these global companies need help developing green workforce skills and capabilities. As direct customers of REDA these companies in the BID offer an ideal first-step to develop some of the recommendations in this report.

¹⁴ The international definition of 'green job' is defined as: reducing the consumption of energy and raw materials, limiting greenhouse gas emissions, minimizing waste and pollution, protecting and restoring ecosystems and enabling enterprises and communities to adapt to climate change (ILO definition).

6.11 There may also be specific opportunities to unlock through the relationship with Reading University and the emerging global climate change sector cluster, the Thames Valley Science Park and the University's work on climate change.

Glossary

Digital twin	A virtual representation of a real-world system, process or product which enables simulated testing, monitoring, and maintenance. Eg a digital twin of an office building could be created and then used to simulate the effects of different heating systems, or to optimise maintenance schedules.
Green computing	A broad term which describes an approach to creating and using technology in ways which limit harmful impacts on the environment, through manufacture, use, and disposal. This includes minimising the impacts of production processes and materials, and the impacts of use by reducing power consumption.
GVA (Gross value added)	An economic measure of the value of goods and services produced in a specified geographic area, or sector of an economy.
LCREE	A definition created by the Office for National Statistics for the Low Carbon and Renewable Energy Economy. It includes activities that deliver goods and services likely to help the UK generate lower emissions of greenhouse gases in particular carbon dioxide.
LGA/Ecuity model	A data model based on LCREE which projects growth in demand for low carbon and renewables jobs based on the assumption the UK gets on track to meet Net Zero by 2050. Growth is assumed to result from sustained national policy, regulation, and investment to meet Net Zero.
Location quotient	Location quotient or LQ measures the extent to which an economic sector is comparatively weak or strong within the local economy against an index of 1 for UK average. Where Reading has a LQ above 1 it means there are more of those types of firms or jobs in reading than in other places.
Net Zero	This refers to the international target of reaching 'carbon neutrality' ie reducing greenhouse gas emissions to as close to zero as possible. In a UK context it refers to the 2019 legislation committing the nation to reach zero emissions by 2050.
ONS	Office for National Statistics the government agency that collects and publishes economic and demographic data including most of the data used in this report.



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