

SKILLS FOR THE FUTURE: THE JOURNEY TO 2030



The Chartered Institution
of Wastes Management

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EXECUTIVE SUMMARY

The next 10 years will be one of transition – a seismic shift from our current linear and sometimes recycling based economy to one which values resources and is more circular, reducing carbon emissions, prioritising natural capital and driving up social value. But as yet, our sector doesn't have all the skills we need to support this transition.

This report – the CIWM Presidential Report for 2021/2022 - captures the thoughts of CIWM members and other professionals working in, or supplying, the resources and waste sector about what the next ten years might hold in terms of sector evolution and most importantly what skills we will need to drive a more green and circular recovery.

KEY SKILLS IDENTIFIED

- Communications and behaviour change.
- Systems thinking.
- Soft skills.
- Data and Information Technology.
- Circular Economy.
- Reuse and Repair.

PRIORITY SECTORS TO COLLABORATE WITH

- Materials and Chemicals.
- Design.
- Producers and Manufacturers.
- Retail 2.0 and Logistics.
- Information Technology.

RECOMMENDATIONS FOR GOVERNMENT

Priority sector recognition

Recognising that the resources and waste sector is a priority sector that can support a green recovery. Working with CIWM as the leading professional body to enable widespread adaptation.

Sector attractiveness

Increasing sector attractiveness by promoting the resources and waste sector (and others in the green sector) as an attractive option for future jobs and careers at schools and colleges.

The right conditions for investment

Providing the appropriate investment, policy drivers and conditions for long-term investment in the sector which will deliver new training programmes and new jobs.

Vision and transition

Providing a clear vision and a transition plan for a green recovery that has skills at its heart and sectoral plans that are clear on priorities and timeframes.

Collaboration

Driving collaboration – cross department / governments / sectors and with regulators, academia and training institutions. Getting the skills where we need them at the right time!



RECOMMENDATIONS FOR CIWM

Reposition

- Reposition itself and drive the sector and government to focus on resources.
- Become the Professional Body that leads on Circular Economy.

Support

- Continue to invest in skills development for members, particularly for the 'new' skills identified that are essential for the transition.

Own

- Own this space – determine how many people work in the sector, what the sector is, what the skills gaps are and how they should be filled etc.
- Produce an annual skills map.
- Continue to monitor skills needs, recognising that they change as new technology, policy, practices and working patterns impact the sector.

Drive industry skills

- Set an industry agenda for skills development and create a new transferable skills framework.
- Recognise that a long-term view is needed to support the transition and keep the agenda live.

Collaborate

- Collaborate widely with other sectors and develop relationships with other professional bodies which will support the green recovery.



RECOMMENDATIONS FOR CIWM MEMBERS

Embrace the change

Change can be challenging, some of us will need to adapt and evolve to make the transition from waste to resources.

Share your knowledge

Share your knowledge and skills with others within your organisation or with the wider CIWM membership. Write an article for [circular magazine](#), present at a webinar, join a [Special Interest Group](#) or share your knowledge on [Community Connect](#).

Never stop learning

Over the next decade our sector will face some of the biggest changes we've ever been through. This evolution will be supported by new knowledge and skills. Dedicate time and planning to learning and invest in your continuing professional development.

Do a skills audit

Recognise the skills you and your colleagues will need for the future. Conduct a skills audit to determine where the gaps are and how you might fill them.

Get support

Take advantage of the existing support provided by CIWM including the [Mentoring Platform](#), [Community Connect](#), [Webinars](#) & [Training Courses](#). Don't be afraid to ask for help.

This report along with an accompanying skills map, will be used by CIWM to inform their learning and development plan. Skills needs do not remain static and CIWM will need to regularly review the skills needs of the sector (with the support of its members) to determine what support could be provided in the future. CIWM president Dr Adam Read will shine a spotlight on skills for the future for his presidential year.

Identification of skill requirements is the first step of the process. Investment in skills development is required across the board, from government and CIWM to organisations and individual members to ensure that we're both fit for future challenges but also leading the way for better resources and waste management.

FOREWORD

Dr Adam Read,
CIWM President



"It is a great honour to be the 105th President of the Chartered Institution of Wastes Management (CIWM). It seems almost an eternity ago that I put forward my nomination for election in April 2018 but, although so much has changed since then, the theme for my presidential year remains highly relevant: skills in transition."

Back in 2018, I was looking to help steer CIWM through a period of significant change. The UK was preparing to leave the EU and a new circular economic system was on the horizon, with the sector having high hopes for the raft of policy reforms that were expected alongside England's new Resources & Waste Strategy. I was keen to make this great institution of ours relevant to the new sectors we would be supporting, from agricultural and chemical to manufacturing and aviation, as we looked to make more wastes into resources and build our membership in new areas and around new technical offerings and training programmes.

My presidency was always going to be focused on how we transition to 2025 and beyond, and that topic feels just as relevant today as it did then. However, the global pandemic has not only challenged our sector and those we support, but has forced many of us to adapt to new ways of working and has accelerated some of the trends that were just beginning to emerge in 2018, including automation, alternative fuel production, extended producer responsibility and decarbonisation. This report, and the work programme that supported it, delivers against this objective, identifying the trends that our sector is facing now and through to 2030. The detailed interviews have helped to clarify the skills, capabilities and competencies that professional resource managers must have.

Not only does this report deliver a clear view of the transition demands our sector will face (and must respond to), it also sets out what we need from government to facilitate the decarbonisation of the UK economy, building on any number of positive initiatives of late, including apprenticeships, sector plans, and strategies to build back greener.

But, perhaps more importantly, I wanted to ensure this report does not simply 'sit on the shelf', but acts as a call to arms for the institution to evolve its membership offering, making it more accessible and relevant to a changing workforce and a membership with new demands in relation to technical competence, professionalism and skills. This is why the report sets out a plan for CIWM to develop a new skills matrix that will be updated

annually to serve as a roadmap for the attributes that will be key to successful resource management in the coming decade, and to use this to work with other professional bodies and partners to develop and signpost the best possible training, mentoring, coaching, learning and development opportunities. We must be as prepared as possible, and that means planning for change today and embracing the associated opportunities.

Finally, I was committed to energising our new and younger members and helping to bring their perspectives, needs, and vitality to a new chapter in our institution's development. As one of the original crop of 'next generation' waste managers working through the CIWM graduate programme back in 1995, I feel a great sense of pride and achievement in having reached the pinnacle of the institution in becoming President. I was very fortunate to have great mentors and some good friends to help me along the way and I am dedicated to ensuring that I can give as much back to the next generation of resource and waste managers as my predecessors gave me during my formative years in the sector.

This is why the morning panel at the Presidential Conference this year, when I receive the chain of office from the outgoing President, Trevor Nicoll, features current and recent graduates talking about their hopes and aspirations for our sector, and looks at the skills and capabilities they have, the courses they chose, and the skills they will need to be effective in our transitioning sector. I promise you this will be the first of many such opportunities for Chartered Resource and Waste Managers, past, present and future, to share their insights, experiences and hopes, and to work collaboratively for the betterment of the sector and our great institution.

Our people are our greatest asset, and we must nurture, support, challenge, and empower them. Their time is now, as we respond to the huge challenges that our sector is facing, from decarbonisation and extensive policy reforms to the digital revolution and the need to adapt to changing situations.

I would like to thank the report authors for their effort and enthusiasm in bringing my Presidential Report to life, in particular the lead author, Sarahjane Widdowson, for working through my ideas in the early days and for encouraging me to think about what legacy I want to leave after my term of office.

I hope you enjoy the read and ask you to join me on this exciting new journey."

INTRODUCTION

The climate crisis; digital transformation; rapid urbanisation; mounting resource pressures; shifting policy landscape; global pandemics; and Brexit – these are all shaping our future, and our sector today.

While we are used to rapidly changing policy and operating environments in the resources and waste sector, the next 10 years have the potential to bring the most dramatic change in our lifetime. Change creates both challenges and opportunities. The sector's workforce must be ready to meet and overcome these challenges, while rising to the opportunities that will open up for deploying new skills, business models, and services and facilities.

Equipping our sector with the right skills for the future will be central to ensuring we're prepared for this transition, as well as to underpinning the green recovery being proposed for the UK.

We must plan for the future as a sector, as a professional body and as individuals. We also need to drive change now within our current workforce, which is why the theme of the CIWM's new President Dr Adam Read will be **skills for the future**. This report will support his presidential year and will be used to inform CIWM's learning and development planning. It is hoped that the report will help to catalyse thinking on the skills our sector needs and who we need to collaborate with to build an inclusive, competitive and more circular economy. Understanding skill requirements for the future is also at the core of CIWM's charitable objectives.



CIWM Charitable Objectives¹

To advance for the public benefit the art and science of wastes management worldwide and so to promote education, the protection of public health and the preservation of the environment, and for that purpose to further and maintain good standards of practice, competence and conduct by all its Members.

OUR TIME IS NOW!

If we don't lead the way as a Sector and as a Chartered Institution we face the risk of becoming increasingly irrelevant to a greener UK as our industry shrinks and as waste becomes a distant memory.

We need to upskill our workforce and attract new talent whilst collaborating with other sectors, academia and leading professional bodies to drive an effective transition to a more Circular Economy.

We must lead this evolution and create a resources revolution which sits at the heart of the green economic recovery.

Dr Adam Read - CIWM President

¹ [About us \(ciwm.co.uk\)](https://www.ciwm.co.uk)

CONTEXT

In 2020 and the first half of 2021, many of us had to reflect on our existing skills and consider what we may need for the immediate future, using the time during lockdown to acquire new skills, and for online learning and peer-to-peer mentoring. In parallel, organisations have had to accelerate their digital capabilities, and upskill and support staff to enable them to work more effectively from home.

Although it's difficult to predict the future, we understand some challenges that we will face over the next 10 years and, at the heart of these, is delivering a green recovery, making decarbonisation a reality, and moving to a more circular economy. Our sector will play a key role in combating the climate crisis and protecting valuable resources, and we must ensure we have the right skills to do this, and to do this well.

Although there will always be a need for some forms of waste management, it will be the **management of resources** that will take priority in the future. This transition will offer opportunities to collaborate with other sectors – by influencing their design, harvesting their materials, or feeding their supply chains with secondary resources – and by showcasing our skills.

If we can influence the system, and work, amongst others, with designers, technologists, data scientists, chemists and behavioural specialists, we will be able to support the much-needed changes in society and industry, and to amplify its impact.

One of the challenges that our sector faces is the perception that those working in waste management don't require regular skills development. When we talk about resource and waste management, we are in fact talking about an incredibly diverse sector, that has evolved, and continues to evolve, from a basic public health service of collecting and disposing of waste, to one focused on material management, maximising the value of resources used in products and services, and minimising carbon and wider environmental impacts, including hazard reduction.

Chartered Members of CIWM are required to demonstrate CPD (continual professional development), and many operational roles require certified technical competence, however, this accounts for a small proportion of those working in the sector. Waste managers can have a wide range of backgrounds from social scientists, engineers and chemists, through to drivers and loaders and formal skills and qualifications in waste management may not form part of role requirements. This is a sector strength as it can broaden diversity and insight but it's also a weakness as there isn't a fundamental understanding of sector issues when you enter the sector nor is there a specific university course aligned to becoming a waste manager.

Supporting ongoing skills development can help to overcome this but requires investment. It's often said that residents judge the performance of their local authority by the delivery of frontline services such as refuse and recycling collection, however, the sector is guilty of not always providing the required investment levels needed by our front line services or the staff delivering those services.

Skills development is fundamental to all facets of our sector, from frontline operatives through to directors and local politicians.

"When I was given waste to manage as part of my facilities management role, I thought it would be easy. I had no idea of the complexity of managing waste and the regulatory requirements. Who knew that choosing what coffee cups to supply to staff would be so complex in terms of how they could or couldn't be recycled. I've had to learn a lot in a short period of time."

Facilities Manager, Blue Chip Company

"As a sector we need to improve our strategic workforce planning capability. This doesn't necessarily mean planning for the next decade having absolute clarity on what skills and competencies are required at the outset. The world is changing too rapidly for that. No, we need to have strategic workforce approaches and plans with built-in agility to cope with a range of contingencies. Only if we take this approach, and work collaboratively across the industry, will the longer-term investment required to deliver the skills we need for the future provide a return on investment."

Dr Tracey Leghorn, Chief HR and H&S Officer, SUEZ Recycling and Recovery UK Ltd

NATIONAL FOCUS

On a national level UK governments have been focussed on driving a green recovery, transitioning to a more circular economy and formulating plans to reduce greenhouse gas emissions. Over the past year a wider range of activities focussing on jobs and skills have taken place or are underway including those highlighted in Figure 1.

Governments want to identify where they can support skills development and job creation, particularly around the transition to a more circular economy,

for example, Welsh Government have been reviewing how the 're' element of circular economy activities (reuse, repair, refurbish etc.) can increase local jobs, whilst a study by Zero Waste Scotland noted that one in 10 jobs in Scotland is related to the circular economy², covering areas such as repairing and recycling goods, plus of course design and technology development. Another study, by WRAP and Green Alliance, concluded that 210,300 new jobs would be required in delivering a circular economy by 2030³.

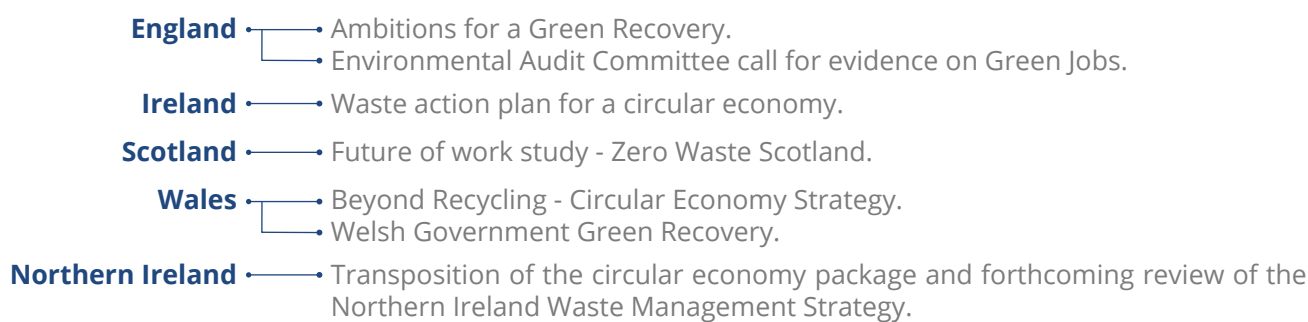


Figure 1: Green jobs and skills drivers^{4,5,6,7}

Education has also been the focus of several recent reports on skills and the green recovery, including the Green Alliance report 'Good Green Jobs – How to engage the public on green jobs'⁸ and, the Aldersgate Group report⁹, which highlighted that government policy, business and the education system have key roles to play in developing future skills that will be central to our economic recovery.

In January 2021 CIWM, [WAMITAB](https://www.wamitab.co.uk/) and the UK Resources Council provided a [joint response](#) to a UK Government, Environmental Audit Committee Call for Evidence on [Green Jobs](#). To support the evidence,

CIWM investigated and used real world examples to illustrate some of the additional jobs that will be required within the resources and waste sector in the future. Dr Adam Read, representing CIWM, also provided verbal evidence to the Environmental Audit Committee on Green jobs and the skills needed for the future.

Estimates on the scale of green jobs in two areas of the resources and waste sector in England (consistent collections and food waste, and reuse and repair) were included along with the support training and learning requirements (detailed ahead).

⁴ [Green Jobs - Committees - UK Parliament](#)

⁵ [gov.ie - Waste Action Plan for a Circular Economy \(www.gov.ie\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/90441/gov.ie-Waste-Action-Plan-for-a-Circular-Economy-2019-2020.pdf)

⁶ [The Future of Work | Zero Waste Scotland](#)

⁷ [Beyond recycling | GOV.WALES](#)

⁸ [Public First research good green jobs.pdf \(green-alliance.org.uk\)](#)

⁹ [1702 \(aldersgategroup.org.uk\)](#)

CONSISTENT COLLECTIONS AND FOOD WASTE

If those local authorities in England currently using a comingled collection for their dry recyclables changed to a source segregated collection (which would deliver greater recycling quality) and collected food waste this could generate thousands of new green jobs. In England alone this is estimated to be:

- 6,000 -7,000 additional frontline jobs collecting source segregated materials;
- 2,500 – 3,500 additional frontline jobs collecting food waste; and
- 1,000 additional jobs involved in the bulking and handling of material for reprocessing.

REUSE AND REPAIR

If each local authority in England invested more in reuse and repair activities, to take these materials out of the waste stream earlier, there could be an estimated:

- 1,000 – 1,500 additional jobs created at HWRCs which develop reuse shops;
- 300 - 500 additional jobs in local authority support teams; and
- 12,000 – 15,000 additional jobs in the community, with the staffing of reuse shops and supporting repair, refurbishment and remanufacturing activities.

TRAINING AND LEARNING

Currently the 351 WAMITAB approved trainers can support over 10,000 learners (using a ratio of 1 trainer to 30 learners). However, to meet the predicted skills capacity gap, just based on the c.20,000 additional jobs identified in the examples provided above, our sector will need to invest in 700+ new trainers, and in new materials that are better aligned with the skills and competences required in these new roles.

This will require significant investment including new centres to be developed across the UK to meet specific regional requirements. Additional investment will also be required to upskill existing professionals and help them adapt to the predicted transition.



"The next decade brings great opportunities for the waste and resources sector to embrace digitisation and contribute to the green recovery and circular economy. Skills development is vital across so many dimensions – engineering, repair and material management for example, including food waste and plastics which remain great challenges in Ireland."

PJ Rudden, Founder of Aengus Consulting and Chairman of Construction Sector Group (Innovation and Digital Adoption) at the Department of Public Expenditure and Reform, Irish Government

PROJECT APPROACH



CIWM appointed four Fellows, Sarahjane Widdowson, Dr Jane Beasley, Ray Georgeson MBE and Dr David Greenfield, to conduct the research and produce this report. The project approach consisted of four steps (Figure 2). A literature review was conducted to understand the latest thinking on skills for the future and a wide range of members and individuals (contributors) working in the resources and waste sector and aligning sectors were interviewed to understand:

- Predictions for the sector's development over the next ten years;
- Skills required to meet future challenges/opportunities (sector and role specific);
- What partnerships and collaborations will need to be explored; and
- What CIWM could do to support this transition.

The project output contains the findings of those discussions and is supported by an accompanying skills map which will help to inform CIWM's learning and development plan.

Project Approach

- **Horizon Scanning**
How will the waste and resources sector change over the next ten years?
- **Developing New Skills**
What new skills / thinking / approaches will be required?
- **Working Together**
Who might we need to collaborate with beyond our sector?
- **Preparing for Success**
What opportunities will there be for existing members of CIWM and the Chartered Institution?

Figure 2: Project Approach

WHAT IS A SKILL?

There are many definitions of what a skill is, within this report we've defined a skill as something that encompasses the **knowledge, competencies and abilities to perform a task**. Within a work environment this can be a general or 'soft' skill such as project management, people management or leadership that may be a skill required for a large number of roles. It can also be a specific skill that is required to deliver a defined job such as engineering skills for a landfill engineer role or driving skills for a refuse collection vehicle driver. Skills are developed through life and work experiences, and also via appropriate study.

Challenging finance and capacity issues can mean that there's a tendency to expand people's roles outside of their responsibilities. Without the right support to expand these skills this can cause problems. Not having the right skills for a job can mean poor performance, missed opportunities but also the risk of serious accidents when appropriate Health and Safety skills or quality communication skills are lacking.





OUR SECTOR

The resources and waste management sector in the UK turns over an estimated £9 billion every year and carries out a number of activities including waste collection, treatment, recycling, reprocessing, disposal and the generation of energy from waste¹⁰.

Waste services are used by every household and business across the UK and the sector provides a universal service, collecting and safely managing a wide range of materials and products from food waste to discarded electronic and electrical equipment, chemicals and healthcare waste. An essential utility, the sector protects the environment and improves the UK's resource productivity by securing valuable materials to enable their transformation from waste to new feedstocks for industry and contributes to achieving net zero emissions.

In addition to being a dynamic growth sector in itself, providing in 150,000 jobs its own right and circa £7bn Gross Value Added (GVA), the waste and secondary resource management industry has an important role to play in improving resource availability and security across the UK economy through the supply of the quality secondary raw materials and feedstocks including:

- Steel, aluminium, plastics, paper, and glass from household and business waste (the use of which often deliver significant energy savings in the manufacturing process compared to virgin feedstocks);
- Rare and expensive metals and minerals from waste electronic and electrical equipment, often needed for low carbon technology solutions;
- Electricity, heat, and biofuels through a range of different energy-from-waste technologies;
- Soil conditioners and fertilisers through a range of biodegradable waste treatment processes; and
- Feedstocks for other aspects of the bioeconomy.

In this context, the sector has an ever increasing and important role to play in supporting the UK green recovery and longer-term decarbonisation across the UK economy.

According to research by Energy and Utility Skills¹¹, the UK resources and waste sector employs 155,800 people, most of whom are frontline staff. Between 2020 and 2030 it predicts that the sector will have a net requirement for 83,000 jobs (8,000 new jobs and 75,000 replacement demand, many of which will be delivering frontline services).



¹⁰ Environmental Services Association, 2016; Jones and Comfort, 2018

¹¹ [Workforce Renewal & Skills Strategy 2020 - 2025 - Energy & Utility Skills \(euskills.co.uk\)](https://euskills.co.uk/workforce-renewal-skills-strategy-2020-2025-energy-utility-skills)

As well as the increasing demand for qualified staff to enable resources and waste to be better managed in the period to 2050, it is worth noting that following EU Exit and new immigration controls, at least 10% of these roles will need to be filled by new UK-based recruits due to the pool of available workforce from these routes decreasing.

In 2012, it was estimated that 18% of the UK resources and waste sector workforce held no qualifications (Energy and Utility Skills, 2012), and this has not changed in more recent years. However, the range of advanced treatment methods now available coupled with increasing technological advancements and more specific legislation are placing greater demands on waste operators to ensure their workforce possesses the right skills, knowledge and understanding to protect human health and the environment and drive up value from the materials that are managed.

These changes have also created greater labour demand for individuals to be qualified at Levels 6 or above (i.e. requiring a degree). This demand has been linked to increasing need to test, sample and analyse waste streams/outputs, as well as a greater focus on processing, recycling and energy recovery (Energy and Utility Skills, 2017). This demand is expected to grow significantly in the next 5 to 10 years as more of our waste streams are segregated for secondary and tertiary use in line with new government targets and policy reforms around Extended Producer Responsibility, deposit returns and consistent policy reforms.

It is likely that the UK resources and waste sector will continue to require more multi-skilled workers as businesses diversify into other areas such as energy and heat generation (Energy and Utility Skills, 2017), power production, plus fuels, chemicals and nutrient provision. However, this could prove challenging as the ageing profile of the workforce suggests that the UK resources and waste sector has the potential to lose valuable technical knowledge and skills in the coming years unless careful succession planning is put in place.

At the opposite end of the skills spectrum, there has been very little research or reference to educating operative level staff across the UK resources and waste sector. The only skills challenge identified in recent research was that EU Exit (and the Immigration Bill) could have a significant impact on the recruitment of lower skilled occupations across the UK resources and waste sector due to restrictions on migration (Energy and Utility Skills, 2017). This will place greater pressure on the UK labour market, as identified earlier.

The UK resources and waste management sector has a significant contribution to make in supporting the creation of additional green jobs, not only those directly created in waste and resource handling, but in the downstream and upstream sectors that are fuelled by our materials or who provide services to our sector. The successful transition from waste to resource management will be dependent on how our sector can work holistically with other industries and supply chains to ensure that they're making the right choices about the materials used and what happens at end of life to their products and packaging. We need to embrace collaborative working and provide our skills to other sectors as well as understanding what they may require.



WHAT DOES THE NEXT TEN YEARS LOOK LIKE?

When this project started in January 2020 we didn't understand how a global pandemic would shape the subsequent year. Predicting the future is tough under normal conditions, so this year has been even harder. However, we can predict some of the major themes that will shape the Environment, Economy and Society (Figure 3) and subsequently look to understand how they may influence our sector in due course.

"COVID-19 has really changed the way we work and the way we think – it has highlighted the need for upskilling in areas outside of what we consider to be our traditional skill set."

**Paldeep Bhatti, Partnership Manager,
Kent Resource Partnership**

Key Themes for the Future

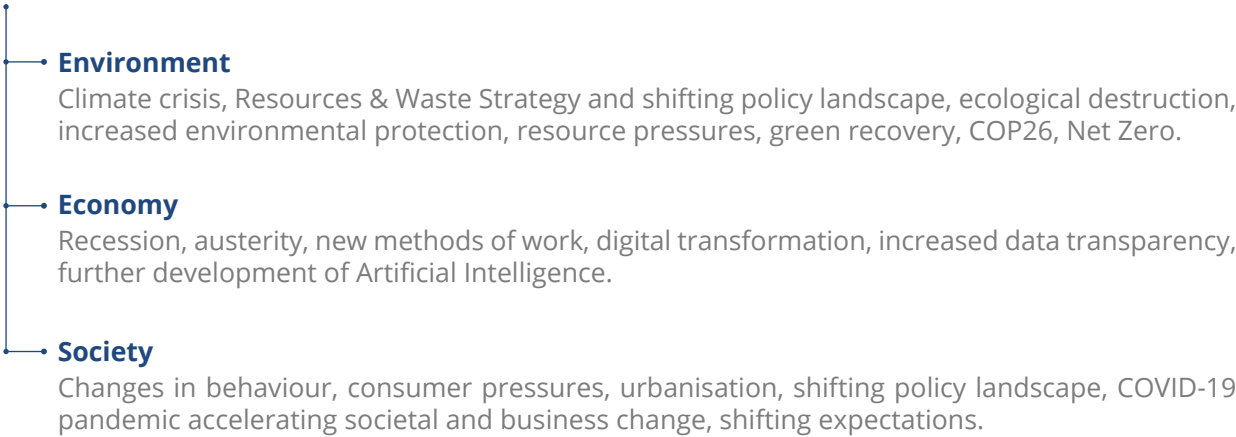


Figure 3: Key themes for the future

For our sector the next ten years will be a period of transition. Forthcoming environmental policy and pressures, economic drivers and societal demands will have a direct influence on how we operate. Over the next ten years (Figure 4) we will transition from a recycling economy through to a carbon economy.

Many organisations are already embracing the circular economy and have carbon neutral or negative operations but others are yet to start the journey and lack the knowledge and skills to do so. Investment and support is required to accelerate this transition.

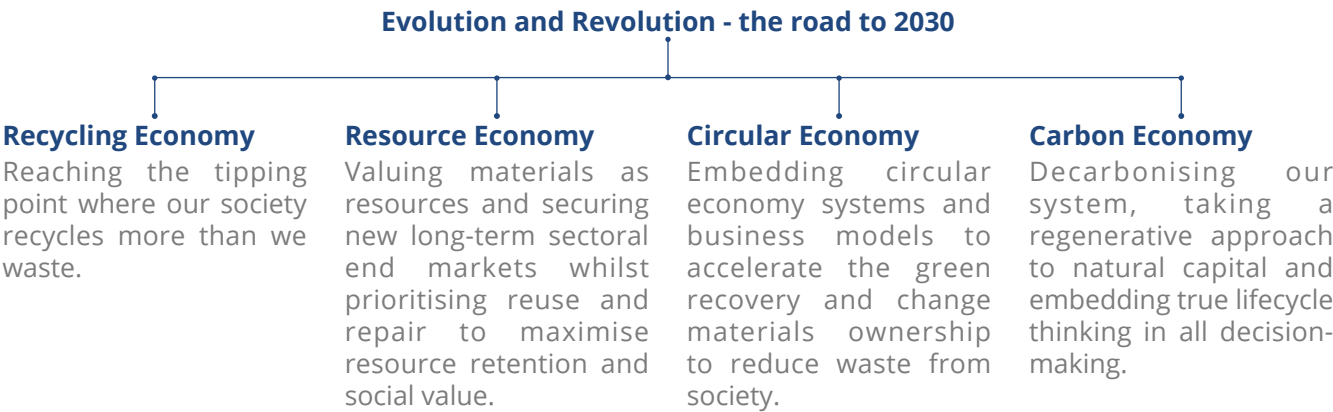


Figure 4: Transition to 2030



SKILLS IDENTIFIED

Through the interviews conducted, a large number of skills have been identified spanning many facets of our sector. Some interviewees hadn't considered the future skill requirements of their own role or of those within their organisation prior to being interviewed. This may reflect that skills development may not be high on the agenda until new skills are required (where a gap is identified or a new challenge faced) or when an organisation is undertaking a strategic planning process. The ability to think medium to long term and plan for change is a skill in itself.

The interviews were conducted throughout 2020 and in the first quarter of 2021. Often, the skills identified were associated with immediate changes to the individual or business. For example, at the start of lockdown in March 2020 business continuity and digital literacy were prominent. Interviews conducted in March 2021 tended to cite change management and collaboration as skills in increasing demand due to policy changes on the horizon.

The skills are presented here in 'theme' areas, however, some skills such as soft skills and technology specific skills are universally applicable. No quantitative measures have been applied to the results.

The skills that were most often cited and considered to be most important for the transition are as follows:

- Communications and behaviour change;
- Systems thinking;
- Soft skills;
- Data and Information Technology;
- Circular Economy; and
- Reuse and Repair.

An overview of the context, skills and challenges identified and next steps for each of the six skills categories identified are presented in the following paragraphs.



SOFT SKILLS



CONTEXT

According to the World Economic Forum Future of Jobs Report in 2020¹², soft skills such as critical thinking and problem-solving topped the list of skills employers believe will grow in prominence from 2020-2025. In addition, newly emerging soft skills in self-management such as active learning, resilience, stress tolerance and flexibility are coming to the fore. Whilst these so-called soft skills are not specific to waste and resource management, they

are increasingly important for the sector as it evolves and reshapes itself in response to more demanding economic, environmental, and societal expectations and requirements. They are also the skills that have perhaps been overlooked in the past and their potential role in ensuring innovation, dynamism and leadership across the sector, may have been sorely underestimated.

SKILLS IDENTIFIED

- **Systems thinking.**
 - Including the ability to work across different disciplines and ensure whole systems processes are understood and delivered.
- **Change management.**
 - Developing and delivering a structured approach to change, giving a workforce, at all levels, confidence in a new vision or different direction of travel.
- **Business continuity.**
 - Responding to difficult or challenging situations and ensuring the main functions of the business continue to be delivered and developed.
- **Application of different business models.**
 - Understanding the role and use of alternative/less traditional models such as leasing, hiring, and lending structures.
- **Project management.**
 - Including the ability to take an idea from conception to effective delivery/implementation; this requires an understanding of the potential challenges to the viability/sustainability of a project and is a skill that is often assumed of those in positions of responsibility.
- **People management.**
 - Ability to effectively recruit, manage and provide ongoing support to a workforce that can be very varied in terms of skills and expertise, and in some instances can include volunteers.
- **Entrepreneurial thinking.**
 - Confidence in identifying and taking advantage of potential opportunities.
- **Leadership.**
 - Ability to be clear and concise, set the direction of travel and motivate others to achieve a common goal. This skill is essential in developing partnerships or collaborations.
- **Crisis management.**
 - Ability to identify a threat to a service or operation and respond appropriately; the need for this skill set was demonstrated during the pandemic and the requirement for emergency planning specifically in relation to service delivery.
- **Commercial awareness.**
 - Understanding the marketplace and those operating within it so that appropriate strategic decisions can be made.
 - Within the reuse and repair sector the biggest challenge is the lack of funding; many organisations are run by volunteers and a disproportionate amount of their time is spent bidding for grants, therefore, the commercial acumen to write bids or gain revenue from other avenues is key to financial sustainability.
- **Negotiation and contract management.**
 - This includes contract negotiation skills, and partnership and collaborations.
 - Relationship management.
- **Communications and behavioural change.**
 - Having a clear understanding which initiatives and activities are successful in generating a behavioural response.

¹² [WEF_Future_of_Jobs_2020.pdf \(weforum.org\)](https://www.weforum.org/publications/future-of-jobs-2020/)

CHALLENGES IDENTIFIED

- **Resources.**
 - Lack of training budgets.
 - Lack of time to commit to training.
 - Insufficient staff to provide cover for those on training.
- **Lack of recognition of the need for soft skills.**
 - Limited understanding of the importance of soft skills to roles within the sector.
- **Lack of understanding of training needs.**
 - Expectation that these skills can be learnt 'on the job' without formal training or support.
- **Lack of appropriate mentors.**
 - Experienced managers or supervisors within the workspace are reduced as teams are cut in response to financial issues; this is very apparent in local government waste services as a result of austerity measures.

NEXT STEPS

Challenges identified, whilst not unique to waste and resource management, do add to the complexities in terms of targeting and successfully developing soft skills in a sector which may underestimate their importance. Some work may need to be done in highlighting and promoting the role these soft skills play in effective and modern waste and resource management services. CIWM has already supported its members in a number of these areas through provision of webinars and articles, this could continue in the future.

It is clear there is a need for upskilling and direct support, potentially through collaboration or facilitating engagement with providers with expertise in these skills sets, in some form. Time pressures may mean that innovative ways to share information and develop knowledge will have to be applied, causing minimal impact on the 'day job'. Coaching or mentoring support to compensate for a lack of experience within teams could be valuable in addressing the skills deficit in this area.

"The softer skills associated with transformation, change management and relationship development are incredibly valuable, but all too often missing from the sector."

Kristy Spindler, Head of Place Response, South Gloucestershire Council

"The skills needed to influence/build relationships and partnerships remain important, particularly when thinking about how we work with the third sector or how we link with other players across the value chain, in particular as we move to a more circular economy."

Mickey Green, Managing Director, Somerset Waste Partnership

"Behavioural change is so important; we are always looking to develop new ways to take consumers along the journey with us as we try and move up the hierarchy."

Annette Dentith, Principal Waste Manager, Devon County Council



CONTEXT

Historically, the waste and resources sector has operated almost exclusively at the end of a product's life with the focus on ensuring management systems are as appropriate and effective as possible. However, there has been an increasing movement within the sector and beyond, to recognise the need to work

more closely with designers to design products better, with resource use and end of useful life strategies in mind. The skills identified will help align the design and waste sectors to a shared vision, placing resource use and value retention, with minimal environmental consequences, at the heart of all decision-making.

SKILLS IDENTIFIED

- **Waste management and circular economy for designers.**
 - Rather than being a unique or specialist aspect of some design courses, recognising environmental consequences of designing a product in a specific way or with a specific set of materials, and understanding the need to make modifications at the design stage to consider value retention, needs to be commonplace. Topics areas should include materials substitution, suitability for recycling / composting / digestion etc.
- **Life cycle analysis.**
 - Understand the need to consider the full life cycle of a product at the design stage, designing with end of useful life/maximising value retention in mind.
 - Understand the options available for effective waste and resource management.
- **Understand the need and the potential to design out disposability.**
 - Business models tend to be about disposability, however with increasing pressure on companies to hit their global net zero targets, the potential role of design in ensuring products have a longer useful life is significant. For example, the potential for refill models rather than single use and the designers role in supporting/enhancing this potential.

CHALLENGES IDENTIFIED

- **The role of design in terms of products' impact is not taken very seriously and designers do not understand the power they have to improve environmental outcomes.**
 - It's not understood and is often discounted. However, the RSA¹³ quoted that 80% of a product's environmental impact is determined at the design stage.
- **Designers are not focused on end of life.**
 - Generally there is a lack of understanding of the end of life of a product and what options are available.
- **Design integrates emotion.**
 - There is a significant challenge in how to make customers care about new systems, particularly where they may require or be perceived to require more effort to use.

¹³ [The Great Recovery | Re-designing the future](#)

NEXT STEPS

Design is crucial to ensure fewer products become waste, and their useful life is maximised. Design is also crucial in ensuring once products are waste, existing systems can be used to manage the waste in the most effective manner i.e. recovering and retaining as much value from the materials in the product, as possible.

There is a need to educate and inform the design sector of the role they play, and although there have been a number of success stories in this area (e.g. RSA Great Recovery), the challenge remains significant in terms of bringing those who are at the start of the value chain, to share the same vision and ethos of those who are at the end. A significant opportunity could be delivered via the proposed Extended Producer Responsibility for Packaging approach, which may incentivise designers to consider end of life options.

Further collaboration and engagement with the design sector is crucial and the need for knowledge transfer is significant.



"Vision - 2030 majority of global FMCG (Fast Moving Consumer Goods) brands to have successfully integrated and have 20-30% of their portfolio delivered through non-disposable means. The dream is by 2030 75% would be achieved. This would require a huge shift in mindset and skills."

Tracy Sutton, Root

"The pandemic has exposed the reliance on a just in time system, we may need to rethink that! We need to introduce designers to circularity and ask them to become agents of change, they will need to work with end of life partners to ensure that aspects such as repair and disassembly are designed in from the start."

Sophie Thomas, Useful Trust





TECHNOLOGY

CONTEXT

According to the World Economic Forum's Future of Jobs Report 2020, 50% of all employees will need reskilling by 2025, as adoption of technology increases. The global pandemic has accelerated digital literacy within the general workforce, allowing staff to work from home and changing mindsets on the benefits of video conferencing.

Our sector is still behind the curve on embracing digitisation though. Whereas organisations like Amazon have digitised their logistical networks and

can track a parcel from depot to door, many in the waste sector have not embraced this technology and are still planning logistics using paper maps. Although there are examples of innovation in this area including waste tracking¹⁴ and using blockchain technology, using artificial intelligence to identify materials¹⁵ and litter¹⁶ and transforming data, technology is not universally adopted. We don't know, what we don't know – we don't currently understand how technology could revolutionise the sector.

SKILLS IDENTIFIED

• Digital literacy.

- Significant gaps in digital literacy across a very diverse sector. The COVID-19 pandemic has shown that there's always new digital skills that need to be learnt.
- Understanding the art of the possible - what software could be utilised to improve effectiveness, how IT can be used in systems analysis etc. is an important skill.

• AI/Machine learning.

- We're a data-rich sector even though we don't collect it effectively or understand the power of what we do collect. Linking our sector to the rest of the value chain, from product development to sale, would allow end of pipe information on product end of life to inform decisions regarding redesign / reuse / repair / recycling etc.
- We need to understand the art of the possible and will need to link AI specialists with sector specialists.

• Material sciences.

- New materials for substitution against more challenging materials or to increase useful life etc.
- Processing of materials in new ways to retain their value and use as secondary resources.
- Application of low carbon materials.

• Data.

- Including data handling, management, transparency, monitoring and evaluation.
- There's an ongoing need for consistent, transparent, and reliable tonnage and composition data to support decision making and respond to challenge, and the ability to collate, manage and use that data effectively to plan and project future service needs.
- Access to reliable and accurate data for waste tracking will also be needed to support decision making and also ensure more effective compliance.

CHALLENGES IDENTIFIED

• New technology.

- Understanding what's in development and how to apply it, for example Digital DRS, which may transform the way some materials are collected.

• Lack of training.

- Data has been on the agenda for years but there's still a lack of investment in training, potentially linked to not understanding the power of data and what it could do.

• Suspicion.

- IT can sometimes be viewed with mistrust – either because it's not understood fully or it's expected that the technology will be used to 'spy' on the workforce e.g. vehicle tracking technologies and chips in bins.

• Lack of collaboration.

- We don't understand what's possible, and therefore don't know who to collaborate with or where to look for skills.

¹⁴ [Vastum: Digital Waste Tracking System - Anthesis \(anthesisgroup.com\)](https://www.anthesisgroup.com/)

¹⁵ [Scalable Automated Waste Analysis | Greyparrot](#)

¹⁶ [LitterCam - Litter prevention with artificial intelligence](#)



NEXT STEPS

Our sector can benefit greatly from new technologies but we're at the start of the journey. We need to collaborate more and demystify some of the perceptions about technology so that everyone can become a digital native.

There needs to be greater sharing/communicating of Research and Development to foster confidence in new technologies. CIWM and local centres have delivered a number of webinars in the past year showcasing some of the AI technology that's being used within MRFs. There could be opportunities to link with other sectors to understand how they're applying technology (to logistics for example).

"I do think you'll see more 'tech' people in our sector and an overall increase in training and development focussing on the use of tech, but I also think there will be a head count reduction as we sharpen up how services are delivered."

Nick Eva, Wasterecruit

"Our material streams for management are going to change, both volumes and composition...more plastic, more WEEE, more cardboard, newspaper and magazines, shift to refillables may result in less opportunity for recycling."

Nick Cliffe, IUK



HEALTH AND SAFETY



CONTEXT

According to the Health and Safety Executive waste statistics¹⁷ in Great Britain for 2020:

- 5000 workers suffered from work-related ill health (new or long-standing) each year;
- 5 fatal injuries to workers in 2019/20;
- 4000 workers sustained non-fatal injuries at work each year; and
- 292 enforcement notices were brought.

These figures demonstrate a continued need for skills around health and safety in the waste sector. Too many injuries and instances of ill-health are continuing to occur.

SKILLS IDENTIFIED

• Health and wellbeing.

- Although the safety aspect of health and safety is generally understood in risk assessments, the health elements can be lacking, so additional skills are required to better understand health and wellbeing needs.
- An ageing workforce particularly in frontline collection services can mean increased health issues including gender related illness such as prostate cancer.
- Changes to collections – new methods of drop off/collection – may have impacts on Health and Safety and staff well-being.
- Societal changes such as those associated with the global pandemic can lead to increased stress, depression or anxiety of people (both in and beyond the sector).

• Hazards presented by new materials.

- Understanding what new hazards may arise across the lifespan of the material including during disposal.

• Fire safety.

- Increased use of batteries – RCV fires.
- Storage of materials – increased segregation in the future may lead to storage challenges.

• Electric vehicles – end of life.

- Manual disassembly of fleet batteries. Automation required to reduce risks to health.

• Autonomous vehicles.

- Skills required to assess the risks involved with autonomous vehicles and in which circumstances they can be safely deployed.

CHALLENGES IDENTIFIED

• Low skill but high-risk industry.

- The majority of the workforce work in areas that require 'low skills' for entry e.g. frontline services. These areas can be high risk in terms of the activities conducted – moving vehicles and machinery. Skills to assess risk but also to communicate it effectively are vitally important.

• Need for constant training.

- Health and Safety requirements need to be continually communicated and embedded in practice. This can be time consuming and costly.

• Pace of change.

- New developments within the industry can mean new hazards or new pollutants. Knowledge and regulation needs to keep pace which can be challenging.

¹⁸ [Waste statistics in Great Britain, 2020 \(hse.gov.uk\)](https://www.hse.gov.uk/waste-statistics-2020/)



NEXT STEPS

Continual Professional Development for Chartered Waste Managers includes Health and Safety requirements and reporting. It's an important element of being Chartered but unfortunately there are still many in the industry that don't have the right skills in this area. Health and Safety must continue to be an area where we share knowledge and invest in ourselves.

We can also learn from aligned industries, adopt best practice and share information. The Environmental Services Association (the trade body representing the UK's recycling and waste management industry) launched¹⁸ a new Health & Safety Strategy in 2020 which has seven working groups (Strategic performance monitoring, Creating a risk assessment approach, Improved H&S competence, Waste collections, Vehicle & pedestrian interface, Occupational health monitoring and Mental Health), each led by a major waste and resources contractor.

"The environmental epidemiology relating to the waste industry needs to be an ongoing process, examining new methods of minimizing health related risks and identifying health risks associated with developing waste management technologies."

Dean Warren, Chartered Resources and Waste Manager, FRAI

"We focus a lot on the safety aspects of the industry but health is just as important. Delivering a waste management service can be a very physical activity and we must protect the health of those on the frontline but we need the skills and understanding to do so."

Jim Perkins, Independent Consultant



¹⁸ [Health and Safety : ESA \(esauk.org\)](https://www.esauk.org/Health-and-Safety)

FRONTLINE SERVICES



CONTEXT

A significant proportion of financial and human resources within the waste sector are directed at planning, managing and operating logistics. Regardless of the model being utilised, whether its in-house public sector provision or outsourced to an external commercial provider, the collection and transportation of unwanted material from waste producers (households or businesses) requires workforce management, planning and transportation skills in addition to a basic understanding of the waste being moved and subsequently managed to ensure regulatory compliance. However, with increasing environmental and waste related policy and legislative

demands and commitments by local government or private sector organisations to deliver against carbon management plans, there are increasing expectations on those involved with collection and management services to be proficient in a much broader skill set than ever before.

Skills identified that have previously been mentioned include softer skills and systems thinking, which are increasingly required to deliver complex services, data and IT, and communications and behavioural change.

SKILLS IDENTIFIED

- **Material science and composition.**

- Understanding composition of waste streams, including the characteristics and components of different materials arising as waste, to ensure appropriate waste descriptors are used, and suitable collection and handling processes are in place.
- Ensuring the most effective management options are identified and strategically planned for, based on the composition and characteristics of the waste stream, rather than decisions driven simply by availability of existing infrastructure.

- **Technical skills.**

- Ongoing need for a basic level of technical understanding is required for collection, treatment, management, and regulation of public sector services.
- Need for specialist technical skills such as driver training for new fuel vehicles to ensure efficiency and performance, or operation/commissioning of a new technology.

- **Procurement.**

- Ability to procure complex services and contracts; this is increasingly falling on waste professionals for whom this is not their usual 'day job' who are having to commission support as they lack the skills and expertise.

- **Development of appropriate metrics.**

- Understanding and utilisation of various metrics and their suitability to demonstrate performance and improvements in areas such as carbon literacy and understanding social value.

- **Innovation.**

- Understanding opportunities for innovation and entrepreneurship
- Fostering cross departmental working, to collaboratively problem-solve through an innovative shared solutions approach e.g. tackling deprivation, job shortages, increasing social value, loss of rental income through waste solutions which can deliver retraining opportunities, address deprivation, provide mental health support etc.

- **Recruitment.**

- Attracting the right people with the right skill set into the industry (not just confined to public sector service but appears to be more prominently experienced in this sector).



CHALLENGES IDENTIFIED

- **Capacity and capability.**
 - Austerity, particularly in local government, has led to a reduced workforce, reduced training budgets and increased expectations on existing employees.
 - Reduced teams and subsequent loss of experience has a negative impact on capability of employees to take on new roles outside their expertise; training requirements may be substantial to meet expectations. There may be a loss of institutional knowledge in specific areas of expertise, for example, procurement and contract negotiation.
 - In addition, employees may be lost to other more lucrative sectors (such as the power sector) where recent growth has been substantial, and the expertise built up is lost with them, for example, losing collection vehicle drivers to the home delivery sector. Shifting employment markets can leave the sector more exposed, particularly in relation to skills development.
 - Ageing workforce, particularly in some areas of service delivery.
- **Move to recruit generalists (value-based recruitment).**
 - Further lack of sector specific skills and understanding of the key issues.
- **Disconnect between policy and practice.**
 - Disconnect between policy intentions and practical capabilities to deliver the changes required. This is a significant skills gap given the amount of policy that will be implemented over the next decade within our sector.

“Local policies need to be aligned with funding availability, otherwise there can be a significant time lag which is challenging when trying to deliver change. In addition, there is the assumption made that there is always the capability on the ground to deliver the policy priorities, which is not always the case.”

Carl Beer, Chief Executive, Merseyside Recycling and Waste Authority

NEXT STEPS

The complexities of the waste sector are very apparent within public sector services; there is a requirement to deliver a service which protects the public health of its community at its most basic level, whilst at the same time pursuing more effective means to be a more progressive service which retains or maximises the value of material resources. This is evidenced in recent years where roles have evolved significantly and there are increased expectations on employees to deliver in areas which may be outside of their skill set. These challenges are not unique to public sector services but also those commercial organisations delivering services on behalf of the public sector or direct to businesses.

There is a clear need to upskill across the sector, but capacity and capability remain a significant challenge. Where skills are specific to a role or area of responsibility the importance of CPD should not be underestimated; this goes hand in hand with employers recognising the value of professional membership for their employees, and the requirements of that membership to stay up to date, and also opportunities offered by membership in terms of access to information, networks etc. Providing opportunities for coaching and mentoring of staff would also be an effective means of providing support with minimal impact on the ‘day job’. Also, the facilitation of secondments across the sector (and potentially outside the sector), could be effective in addressing a number of skills gaps.

“Operationally, when you adopt new practices, you need to ensure the skills sets are in place to support them. New fuel vehicles are a great example, as in order to optimise their use, staff need retraining; this should not be overlooked when planning change.”

Richard Pearn, Head of Waste, Resources and Energy, Peterborough City Council

“We need systems-thinkers, problem-solvers, innovators. We need people who think and work with agility. We need people who can thrive in uncertainty and help deliver the changes we need to make as businesses, an industry and society happen.”

Dr Tracey Leghorn, Chief HR and H&S Officer, SUEZ Recycling and Recovery UK Ltd



REUSE AND REPAIR

CONTEXT

Reuse and repair (and the variations of maintaining the life of products and services) is very much considered to be part of the green recovery. Although not a new or novel aspect of waste and resource management, it has been a marginal or niche activity provided by third sector or social enterprise operations at household waste recycling centres. However, in the last 10 years with TV programmes such as The Repair Shop and the Men-in Sheds programme it is starting to gain a higher profile.

The 200 or so repair cafes, the 400 or so Freegle communities, and the REUSE network indicate

that activity is growing, but is likely to need more investment to achieve the levels required. Over the last few years, the right to repair movement has also grown, with the UK Government even confirming that a right to repair bill will be coming. A challenge for this sector is funding, many organisations rely on grants and volunteers to operate.

Skills identified that have previously been mentioned include softer skills and systems thinking, data, commercial awareness and communications and behavioural change.

SKILLS IDENTIFIED

• Specialist skills.

- Many of the skills needed for repairing include traditional trades such as carpentry, metal fabrication, electrical testing and repair, computer programming and software applications, sewing, crocheting and knitting.
- Looking at reuse, the skills required are similar, especially if the item needs repair, however, the ability to share is more of a challenge. Programming skills to enable sharing through online platforms such as Freegle, Globechain and Olio. This type of sharing is significant and large tonnages and CO2 savings are achieved already, but not always included in sector statistics.

• Problem solving.

- In many cases the reason why a product is discarded is because it is broken or defective, therefore, identification of the fault(s) is critically important to give it a second life. In many cases repairers will have a checklist or use an online video tutorial to determine the cause.
- Connecting sharers and recipients is a difficult task; many organisations rely on online platforms whilst others have a mix of internet and location-based services. Organisations such as the Library of Things use an IOT based locker system to allow sharing of tools and consumer equipment, whilst Tech-Takeback use an app to allow residents of Brighton & Hove to book a doorstep collection of small electricals for data erasure, repair and reuse.

• Reverse logistics.

- The use of logistics to ensure items can be collected, returned and stored is critical, understanding and use of route planning mapping software is essential.
- Understanding reverse logistics and last and first mile opportunities are essential to ensure maximum capacity is achieved by the fleet on inward and outward journeys.

• Auditing.

- Many of the grant providers require evidence of tonnages collected and carbon impact, therefore, establishing weighing and auditing systems is necessary. Organisations like Tech-Takeback weigh every one of the 3,000 items they collect every month, whereas Freegle assign an average weight to each item freegled and the Repair Cafés have developed a CO2 savings calculator for every device repaired, saving the creation of a new device.

Reuse and repair has got to be easy for people to do – to achieve this we need to increase access to these services and this means increasing skills and availability. Local authorities are well placed, as a trusted source of local information and services, to be the catalyst for a circular economy.

James Kay, Resource Efficiency Wales



CHALLENGES IDENTIFIED

- **Identifying funding opportunities.**
 - Sourcing funding routes can be difficult and time spent repairing doesn't always equate to value of product. Building skills to understand where to identify potential funding would be helpful, as well as understanding prioritisation of effort.
- **Logistics.**
 - The challenge of collecting and transporting items so they don't get damaged is key. Skills could be adopted from the logistics sector.
- **Stigma of second-hand.**
 - Overcoming perceptions and ensuring items are seen as a viable alternative to new purchase can be very challenging; there is a disparity between those who are financially reliant and need reused or repaired items and those who choose reused or repaired items over affordable new products. Communications and behavioural change skills could help to overcome this challenge.
- **Warranties for repaired and reused items.**
 - Providing a warranty is in many cases very difficult; a few will offer short term warranties, however, without an extensive check of all systems within a product, a return could mean that the value from the reuse has been completely lost.
- **Regulations (e.g. POPs) and electronic reuse is difficult.**
 - Most regulations have been designed for recycling, therefore things such as the WEEE directive make reuse difficult, because unless that item is donated for reuse, it automatically becomes waste, meaning that for example, with computers older than 2009, the plastics contain POPs and the item will have to be taken for hazardous treatment. Keeping on top of regulations is important.
- **Metrics - how do we recognise the effort.**
 - Reuse, repair and whilst not in this category, home composting, in many cases fall through formal reporting systems such as Waste Data Flow. A new mechanism for counting all of these actions is crucial.
- **Resilience/sustainability.**
 - Many organisations rely on volunteers, this is not sustainable for the long term. This approach also requires repeated training which can be time consuming.
 - Many organisations use skills that have been handed down from previous generations, there is a real danger that these will be lost, unless a more sustainable funding stream is found.

NEXT STEPS

The reuse and repair sector will continue to come under increased public attention over the coming years; how the CIWM embraces this sector will be critical to the long-term future of CIWM. Training programmes for many of these skills will be useful, but only in partnership with other organisations. CIWM should be working with many of the named organisations to bring them into the membership and collaborate on a medium-term funding plan.

Future strategies and programmes that feature reuse and repair including those listed below could be key to unlocking funding and regulatory control and empowering change.

- Waste Prevention Programme - England¹⁹
- Waste Action Plan for A Circular Economy – Ireland²⁰
- Beyond Recycling – Wales²¹
- The Future of Work – Scotland²²
- Circular Economy Package Policy – Northern Ireland²³

"We need regulation on materials to make end of life easier and we have the opportunity for new technologies that will allow, for example, 'reverse polymerisation' - this requires new skills for the resource and waste sector."

Bridget Jackson, PWC

"We need a world where products and services are designed for extended life, repair and reuse, with recycling being the last resort!"

Dr David Greenfield, Tech-Takeback

¹⁹ [Waste Prevention Programme for England consultation document.pdf \(defra.gov.uk\)](#)

²⁰ [gov.ie - Waste Action Plan for a Circular Economy \(www.gov.ie\)](#)

²¹ [Beyond recycling | GOV.WALES](#)

²² [The Future of Work | Zero Waste Scotland](#)

²³ [Circular Economy Package Policy Statement | Department of Agriculture, Environment and Rural Affairs \(daera-ni.gov.uk\)](#)

CIRCULAR ECONOMY



CONTEXT

The goal of circular economy is to design out waste and pollution. A circular economy looks beyond the current make-use-dispose economy to the principle of keeping products and materials in use for as long as possible by enabling reuse and recovery of materials. Indeed, CIWM working with Rype Office furnished their offices with remanufactured office equipment²⁴ including carpet tiles, tables, chairs and booths.

The Resources and Wastes Strategy for England²⁵ states in the introduction "Our strategy sets out how

we will preserve our stock of material resources by minimising waste, promoting resource efficiency and moving towards a circular economy." It is within this context that circular economy is now emerging as a new systematic way of approaching the world we live and work within. The world of waste management needs to evolve to a world of resource and material capture and management.

Skills identified that have previously been mentioned include softer skills and systems thinking, data, and communications and behavioural change.



CIWM OUR MOVE IN NUMBERS



**WE DIVERTED
2.6 TONNES
OF FURNITURE
FROM LANDFILL**



78%
OF OUR CARPET
TILES ARE **REUSED**
OR **RECYCLED**



7.6 TONNES
OF CO₂e GHG EMISSIONS WERE
SAVED BY REMANUFACTURING
FURNITURE



CIWM Office Refurbishment



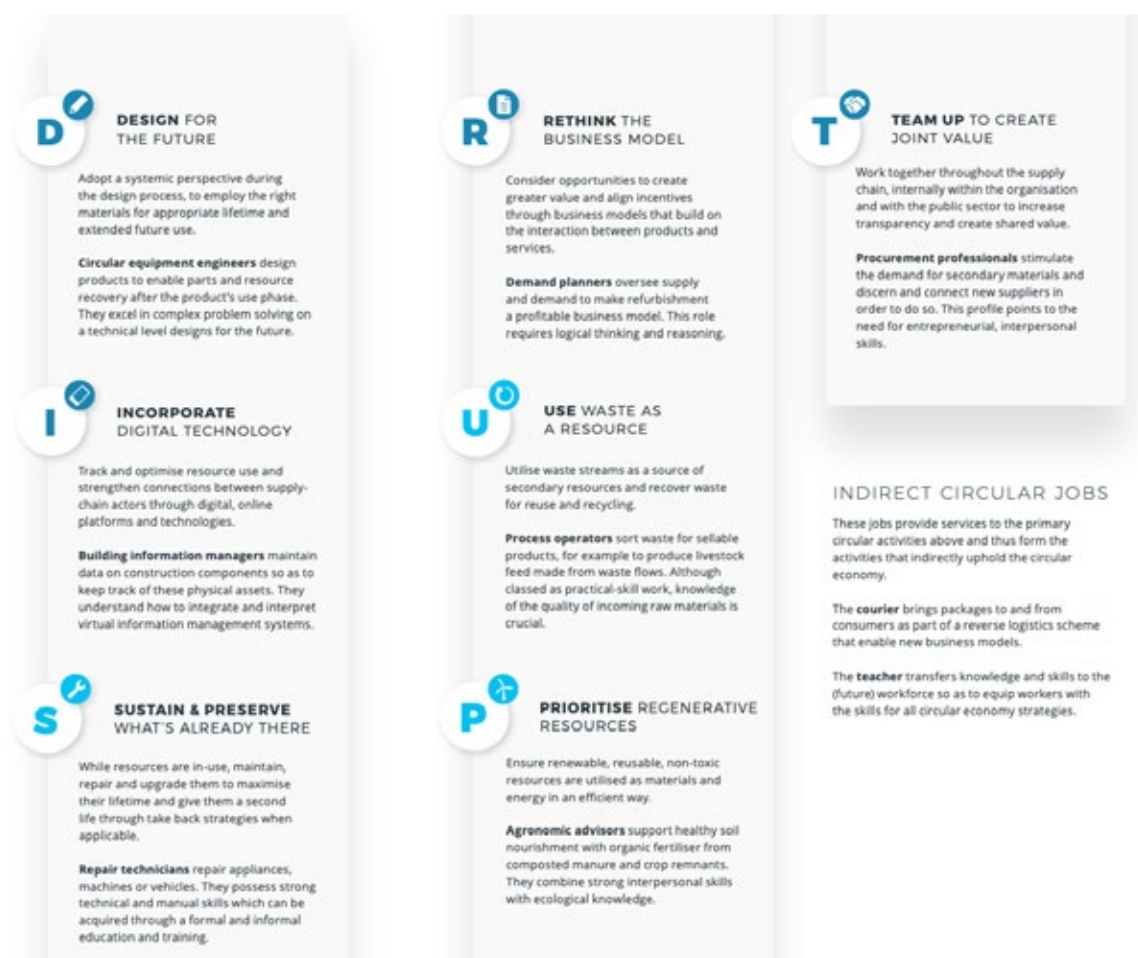
²⁴ CIWM diverts 2.6 tonnes of office furniture from landfill, saving 7.6 tonnes of CO₂e (circularonline.co.uk)

²⁵ Resources and waste strategy for England - GOV.UK (www.gov.uk)

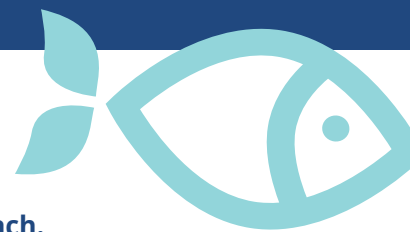


SKILLS IDENTIFIED

- **Whole life costing.**
 - Crucial to understanding circular economy are five parameters; design, materials, construction, use and end of/next life. The skills needed at each of these stages are very different and many won't be required by the current scope of CIWM, however, the knowledge of these stages and the impact they have on presentation of materials is fundamental to the skills required over the coming decades.
 - **Carbon accounting.**
 - Circular economy systems and business models will support a transition to net zero; CIWM members will need to consider how they can calculate and be prepared for carbon trading.
 - **Extended producer responsibility.**
 - EPR may lead to a shift of material collection from public to private sector, but also an increase in quality and quantity. These factors are quite crucial in incorporating into future infrastructure needs and will lead to embedding of new technologies.
 - **Increased IOT, machine learning and AI.**
 - The rise of the robotic separator over the last few years is not surprising, with resource managers wanting higher volumes, higher quality and less cost; the use of IOT, ML and AI will only continue. There will be more technical roles managing robots and less manual labour.
 - **Product as a service – new business models.**
 - This concept is one that should allow for more remanufacturing and therefore less waste. This may mean CIWM members are dealing with smaller amounts of material, therefore more consideration will be needed to understand how the logistics skills we have in the sector can be utilised to support products as a service.
 - **Industrial symbiosis.**
 - Separation systems will have to move nearer to the source of material.
- The jobs and skills in the circular economy report for Circle Economy in 2020²⁶ highlights the need to assess the skills and future pathways for circularity. A summary of the roles in the CE are highlighted below:



²⁶ [Jobs & Skills in the Circular Economy - State of Play and Future Pathways - Insights - Circle Economy](#)



CHALLENGES IDENTIFIED

- **Circular economy is still seen by many to be fluffy and intangible.**
 - The CIWM has already partnered with the Circular Economy Club to offer CE training at a discount to CIWM members, but many people see it as a green fad, however, with UK and European legislation, there is a need for behaviour change in mindset and generally to understand how waste fits within a circular economy.
- **Integrating knowledge.**
 - Artificial Intelligence and Machine Learning will mean new types of workers will enter the industry, with less waste knowledge but more technical and computer orientated language. There will be a challenge to bring the two together.
- **Whole system approach.**
 - CE is a whole system approach, everyone from the CEO through to frontline workers need to embrace the concept. As identified earlier, systems thinking will be crucial.
- **Clarity and communications.**
 - The language of circular economy is similar to sustainability, but concepts are different. Clarity and communications are key.
- **Investment.**
 - New collection methods (logistics), using takeback apps and branded services will be required; this is a huge investment.
 - Inertia and unwillingness to embrace change that threatens the status quo (current jobs etc.).

NEXT STEPS

Prof Julia Stegeman states in her paper *"The transition to the circular economy presents us with an opportunity to redefine work, rebalance power and reimagine the way we use and value resources - including labour."*²⁷ CIWM needs to work with partners to determine how circular economy will impact on existing jobs and what new roles will be required for the future, particularly the role that circular economy can play in supporting a green recovery.

"The skills of the future for circular material management are: data, blockchain, takeback, kerbside and design."

Nick Cliffe, IUK

"Many organisations are developing a Circular Economy Strategy that will prioritise material management and reduced resource consumption – the impact on the waste sector will be to ensure it can adapt to all these changes, otherwise it may become obsolete."

**Prof Fiona Charnley,
Co-Director University of Exeter
Co-Director of the UKRI National
Interdisciplinary Circular Economy Hub**



²⁷ [Recognising waste use potential to achieve a circular economy](#)

CLIMATE CHANGE



CONTEXT

To mark World Environment Day in June 2020 and to signal its support for a 'green' recovery from COVID-19 and the wider carbon net zero ambition, CIWM signed up to the Pledge To Net Zero, an initiative set up to make the environmental services sector a leader in climate change action. CIWM joins a large number of actors within the resources and waste management industry that have declared a climate emergency and/or set targets to cut greenhouse gas emissions. These include a large number of public sector organisations, businesses and, the ESA, who will be launching a net zero strategy for the recycling and waste management sector in June 2021.

Declarations of support must be followed with action, which can include setting science-based targets to reduce emissions. This welcome move to limit climate change has gathered increased momentum in the last

two years and the need to 'do something on carbon' is a high priority. The challenge though is that there are currently low levels of carbon literacy within the industry. Although focus on this area is increasing, the industry is facing a steep learning curve – as is the public. A recent survey published in the Financial Times²⁸ stated that most people (world average of almost 60%) think the most effective way to cut their carbon emissions is to recycle more. Emissions saved from recycling is a small amount compared to not having a car, eating a plant-based diet or having one less child, however recycling is still important and may be a gateway for communicating further with the public and driving action.

Skills identified that have previously been mentioned include softer skills and systems thinking, data, and communications and behavioural change.

SKILLS IDENTIFIED

- **Carbon literacy.**
 - Increased knowledge of the effect of Greenhouse Gases and what can be done practically within waste management services to reduce emissions.
 - Understanding of how to prioritise activities.
- **Metrics.**
 - Increased understanding of what to measure and the relevant system boundaries.
 - Modelling skills and use of tools to monitor and evaluate emissions.
 - Knowledge of how to factor carbon into decision-making including the use of carbon metrics within procurement of services and infrastructure.
 - Understanding the tension between metrics e.g. recycling rate and carbon.
- **Waste treatment and disposal technology.**
 - Technical knowledge of how to future-proof major infrastructure developments to align with carbon targets, this could include using Carbon Capture and Storage, or utilising heat etc.
- **Carbon efficient fleet, including electric vehicles and natural gas vehicles.**
 - Business case development and understanding whole life cost.
 - Driving skills for electric vehicles.
 - Supporting infrastructure requirements for low carbon fleet, including links to grid.
- **Carbon capture and storage technology.**
 - Gaining operational insights from international developments.
 - Knowledge transfer – what technology is available, how does it work, where could it be considered?

²⁸ [Clothes dryer vs the car: carbon footprint misconceptions | Financial Times \(ft.com\)](https://www.ft.com/content/2020/06/24/clothes-dryer-vs-the-car-carbon-footprint-misconceptions)

CHALLENGES IDENTIFIED

- **Fast pace of change.**
 - New technology can mean that regulators and technology providers, operators, contractors and local authorities need to learn at the same pace; this can slow down the development and permitting process.
 - Operational skills may need to be partially learned 'on the job' if similar facilities aren't in operation.
 - International best practice needs to be translated into UK practice.
- **Lack of knowledge on carbon.**
 - Waste managers will need greater carbon literacy in the future to inform decision making, be able to converse confidently with stakeholders (including the public) and to drive forward activities that will reduce emissions.
 - It's important that we don't stop with carbon – we need to integrate it into wider decision making. We need to upskill on triple bottom line accounting and consider social impacts/benefits and wider natural capital and biodiversity agendas within our decision making. We need to embrace and be comfortable with complexity.
- **Collaboration.**
 - For public sector services, in particular collaboration across departments / directorates / sites will be critical to delivering change. Waste managers will need to collaborate with others to deliver systemic change. Negotiation skills will also be required to ensure that the important role that resources and waste management can play in reducing greenhouse gas emissions is not overlooked.
 - Collaboration will also be required between different organisations, sectors and regions to amplify.



NEXT STEPS

According to the Local Government Association²⁹ in 2018 there were 185,000 full-time workers in England's low-carbon and renewable energy economy. In 2030 across England there could be as many as 694,000 direct jobs employed in the low-carbon and renewable energy economy, rising to over 1.18 million by 2050. The resources and waste sector has an important role to play but to do this we must address the urgent need to improve carbon literacy within the sector. Sector professionals need to understand how Greenhouse Gas emissions relate to resources and waste management, how they can be measured and how carbon should be factored into decision making for services and infrastructure. This will be an important and universal skill requirement for waste managers within the next ten years.

On a more technical level as advanced technologies such as carbon capture, storage and utilisation are increasingly used in the UK, more technical specialists will be required to deliver the technology. These specialists may come from outside of the sector but will need to gain skills in understanding the operational waste environment.

"As new technologies are adopted in the UK such as carbon capture and utilisation there will be a lack of existing data and guidance available. It will be essential to collaborate with technology providers and the EA to agree approaches, and gather data to support facility proposals in the absence of a defined regulatory position. Learning on the job, collaboration and negotiation skills will become increasingly important alongside technical skills."

Alice Gibbs,
Environmental Consultant, RPS

"To achieve Net Zero and have the waste and resources sector fully involved in this needs a refreshed approach to the development of skills driven by all industries and sectors who in turn need to be provided well by trainers, colleges, universities and institutions like CIWM. Nobody has that definitive route map to Net Zero and so, although we know radical change is essential and urgent, we will need to be flexible, intelligent and nimble to deliver the skills and capacity needed."

Iain Gulland, Chief Executive Officer of
Zero Waste Scotland

²⁹ [Local green jobs - accelerating a sustainable economic recovery | Local Government Association](#)

OTHER THEMES



A number of other theme areas were identified where skills were highlighted as being important over the next ten years, and those listed below align to the transitions discussed within this report. The skills map accompanying this report contains the full list of skills, which include areas such as healthcare waste, hazardous materials, agricultural waste and nuclear waste.

PRODUCERS

A crucial part of the value chain, producers in the past have simply paid for services to remove/address the waste issue, however, changing policy and legislation places an increasing need for greater involvement/expectations, for example:

- Impacts of EPR not fully understood by many in sector, how this may change collection services and service providers.
- Increased opportunities through technological/innovative solutions to reducing/managing waste.
- Cross sectoral support required, through different channels to reach wider/broader audiences.

REGULATORS

Understanding the systems and processes for which regulators are seeking compliance is essential in developing good working relationships across the sector and improving performance and practices.

- Ongoing training need in terms of waste and resource management practices and technical innovations.

CONSTRUCTION AND DEMOLITION

A major waste generator that has seen some success in previous activities to reduce waste and improve practices, it remains an ongoing challenge.

- Materials recovery aligned with value.
- Sustainable building - circular economy - modularity of design and disassembly.

PLANNING

From housing developments through to major waste treatment infrastructure, waste planning skills are required across the industry

- Increasing access to reuse and repair infrastructure.
- Understanding what planning requirements may be needed for the introduction of reverse vending systems for DRS.



"Food waste recovery needs to be a top challenge, it needs to be mandatory as voluntary take up is poor. Hoping that people are becoming more switched on to experiences rather than stuff....refocuses the attitude to food (will this be short term) leading to less waste generation."

Mike Hanson, Baxter Storey



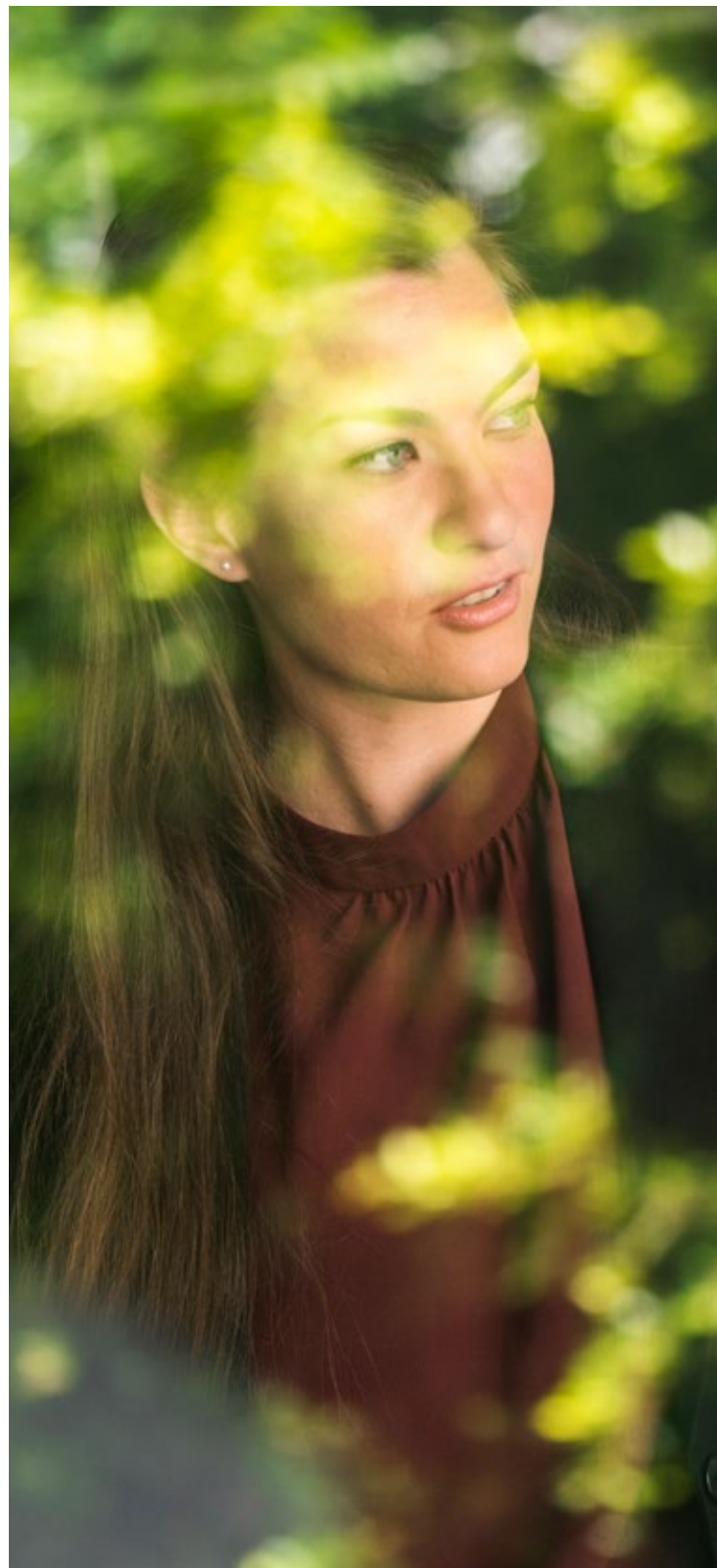
WHAT SUPPORT DO WE NEED FROM GOVERNMENT?

In November 2020 CIWM with WAMITAB and the UK Resources Council submitted³⁰ a joint response to the Environmental Audit Committee³¹ enquiry on Green Jobs. The enquiry is looking at how green jobs can help tackle the expected rise in unemployment due to COVID-19 in a sustainable way. It is also looking at the jobs, skills and training needed to achieve the UK's longer-term climate and environmental ambitions and what planning and work is taking place to meet these requirements.

CIWM's response stated that government must provide the necessary **leadership and vision** on the green transition **and the skills necessary to underpin it** so that appropriate investment, innovation, infrastructure and training can be delivered. Transitioning to a resource efficient, low carbon economy will require a renewed focus on 'green skills' as part of an overarching national skills strategy and skills related to resources and waste management must be part of this mix.

A 2011 strategy document 'Enabling the transition to a green economy' prepared by the UK Government's Department for Business, Innovation & Skills notes that: ***"The transition to a green economy requires a workforce with the right skills. This includes not only skills in the low carbon and environmental goods and services sector, but also those needed to help all businesses use natural resources efficiently and sustainably and to be resilient to climate change."***³²

Significant targeted investments are also needed in education and training to address both the immediate unemployment resulting from COVID-19 and the structural shifts needed to underpin the green recovery and longer-term net zero ambitions. As already noted, cross-government leadership and vision will be required to allow industry sectors including the resources and waste sector, as well as those responsible for shaping the education and research and innovation frameworks to determine what interventions, support and initiatives are needed to ensure that the UK economy has necessary green skills. Without clarity, the sector's major employers may be unwilling to commit to significant retraining or recruitment until the skills gap becomes acute, which is likely to be too late to deliver on government's ambitions and targets.



³⁰ <https://committees.parliament.uk/writtenevidence/21625/pdf/>

³¹ [Environmental Audit Committee - Summary - Committees - UK Parliament](#)

³² [Enabling the transition to a Green Economy Main_D.pdf \(publishing.service.gov.uk\)](#)



Within the submission the following specific recommendations for the measures government should take were presented:

- Provide support for reskilling of declining sectors where the fundamental skills are transferable to new growth sectors;
- Consider investment conditions, incentives and other policy levers that will make reprocessing of secondary materials more attractive within the UK, thus ensuring more jobs are created here than in overseas markets; and
- Consider new extended producer responsibility and eco-design frameworks that create further domestic opportunities for waste prevention, reuse and repair.

In 2021, the UK government has continued to focus on skills and outlined plans for a 'green industrial revolution'³³ that can support the UK in building back better, supporting green jobs, and accelerating our path to net zero. The Queens speech (2021) also outlined future programmes for a 'skills revolution'. The resources and waste sector can play a central role in delivering against these objectives, through capturing resources that would have otherwise been wasted through the essential services we provide and making them available in the right quality and format to support other sectors. Our sector can also transfer knowledge and skills to other sectors that need to make the transition to a more circular economy and championing the green recovery through job creation and boosting the attractiveness of the environmental sector as a whole. Skills are central to the delivery of the circular economy ambitions of Ireland, Northern Ireland, Scotland, Wales and England, but we need support to deliver this.

Within this report the following wider recommendations have been made:

Recommendations for government

• Vision and transition

Providing a clear vision and a transition plan for a green recovery that has skills at its heart and sectoral plans that are clear on priorities and timeframes.

• Priority sector recognition

Recognising that the resources and waste sector is a priority sector that can support a green recovery. Working with CIWM as the leading professional body to enable widespread adaptation.

• Sector attractiveness

Increasing sector attractiveness by promoting the resources and waste sector (and others in the green sector) as an attractive option for future jobs and careers at schools and colleges.

• Collaboration

Driving collaboration – cross department / governments / sectors and with regulators, academia and training institutions. Getting the skills where we need them at the right time!

• The right conditions for investment

Providing the appropriate investment, policy drivers and conditions for long-term investment in the sector which will deliver new training programmes and new jobs.

Developing the appropriate resources and waste management skills for the future requires collaboration, both internally across departments but also externally with governments, public sector, third sector and businesses across the UK and Ireland. CIWM, as the leading voice on resources and waste management, can support this.

³³ [The Ten Point Plan for a Green Industrial Revolution \(HTML version\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/95444/ten-point-plan-for-a-green-industrial-revolution.pdf) - GOV.UK (www.gov.uk)

WHY ARE PARTNERSHIPS SO IMPORTANT?

We can't do everything on our own and we shouldn't. Working together will allow our sector to amplify our collective impact and, will be a necessity if we're to leave the environment in a better condition for future generations. We must improve our collaboration skills so we can gain the most from the organisations our sector works with. Our sector is also one of the only sectors that provides a universal service. Everyone requires waste management. This provides the sector with an opportunity to influence supply chains on a global scale, but also influence local businesses to segregate their materials for recycling on a local scale.

Working together has been a strong theme throughout all interviews conducted, with the following cited as being particularly important:

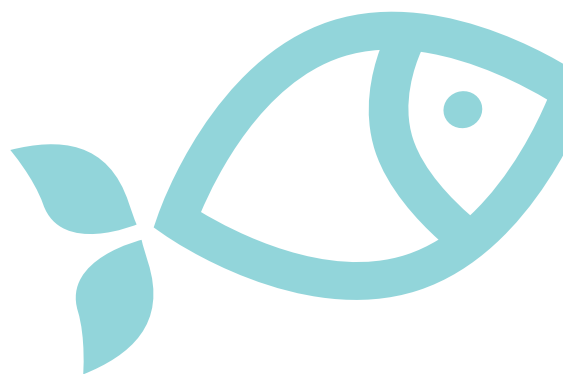
WORK WITH OTHER PROFESSIONAL BODIES IN THE UK AND INTERNATIONALLY

- Knowledge transfer – highlighting why resources and waste management are essential to all other sectors.
- Provision of training to other sectors (becoming the provider of choice for waste related training).
- Access to specialist training and best practice from other sectors.
- Developing a symbiotic relationship with Society for the Environment³⁴ bodies and provide waste and resource knowledge to other professions working in aligning sectors.

WORK ACROSS SUPPLY CHAINS

- Influence supply chains from design and delivery through to reprocessing.
- Provide resource and waste management knowledge that is specific to elements of the supply chain e.g. information about end of life to the design stage.

It's recommended that a key part of the presidential year will include developing partnerships to facilitate future skills development.



"There is incredible knowledge and experience of all aspects of waste management amongst CIWM's membership and therefore the opportunity to play an important role internationally in enabling skills transfer. I know that CIWM members could offer crucial support in accelerating the transition to sustainable waste management by drawing on the approaches and lessons learned in the UK. Pollution is a global issue and providing the skills to prevent plastic leakage into the ocean or stop waste burning transcends borders benefitting the entire planet and all of its people."

**Ceris Turner-Bailes,
CEO of WasteAid UK**

"Improving understanding of modern supply chain management will be important for CIWM and its members, opening the sector up to learning from other sectors and embracing disruption to old business models. There is an urgent need to increase the capacity of the sector to meet change head-on, and that requires innovation in the delivery and devising of skills development."

**Eric Randall, Director of Bryson
Recycling in Northern Ireland**

³⁴ [Society for the Environment \(socenv.org.uk\)](https://www.socenv.org.uk)



WHICH SECTORS WILL WE NEED TO COLLABORATE WITH?

The following sectors were identified as those that are central to managing the flow of material resources in the future, from products and packaging manufacture, to support services and new end markets which if misaligned will ensure our materials end up as waste. Working collaboratively with these sectors will drive more circular thinking, accelerate digitisation and bring efficiencies to the way we currently collect and manage our resources.

MATERIALS AND CHEMICALS

- The waste we need to manage is constantly evolving and we must understand what new materials are being used (carbon fibre and nanotech etc.), and what is the material and chemical legacy of current materials so that we can better retain the value from those resources at end of first life.

DESIGN

- Many designers don't understand the power they have over whether a product can be reused / repaired / recycled at the end of its life. Our sector can play a role in raising awareness and influencing designer behaviour.

PRODUCERS AND MANUFACTURERS

- Producers are increasingly having to think about and take responsibility for the 'end of life' of their product. We can provide knowledge and skills around end-of-life processes, resource recovery and re-manufacturing and support new systems.

RETAIL 2.0 AND LOGISTICS

- The retail sector are experts in logistics. We have traditionally used a low-tech approach to collection but as resources become increasingly important and valuable, we will adapt our approach to capturing, harvesting and managing resources.

INFORMATION TECHNOLOGY

- We need to understand what is possible. Our sector is ripe for innovation from ways in which we collect waste (just in time or scheduling) through to how we extract valuable resources and enhance system circularity to maximise value and ease of recovery.



WHAT CAN CIWM DO?



Over the last year CIWM has invested heavily in skills development for its members (Figure 5). It is looking at the transition to a resource-focused sector, and how it can better align with the changing and growing number of members at different levels and experience.

Figure 5: CIWM in 2020 - Focus on Skills and knowledge transfer for members

- Ran over 50 webinars, with 8,365 registrants and 5,203 attendees³⁵
- Launched CIWM Connect³⁶
- Launched four new virtual training programmes³⁷
- Launched CIWM mentoring with over 70 members signing up³⁸
- Announced CIWM's integration with WAMITAB³⁹



Members have also had the opportunity to listen to webinars and contribute to the Community Connect platform. Sharing knowledge and skills has been an important way to link up with other members and give back to the sector and will be supported in 2021.

In the last CIWM presidential year Trevor Nicoll created a Green Careers Toolkit⁴⁰, a practical resource to help equip and inspire secondary school students to consider careers in the resource and waste management sector.

Encouraging students to take an interest in science, technology, engineering and mathematics, and highlighting the skills needed to transition to a low-carbon economy, will help secure the next generation of resource specialists. Many CIWM members do this through their employers or their own efforts, and CIWM will continue to encourage and support this. Dr Adam Read's presidential year is focussed on the existing workforce and those that will come into the sector over the next ten years. Understanding future skills requirements will help to shape CIWM's learning and development strategy for the future. This strategy will outline how CIWM will support future skills development, encourage partnership working and detail what training and qualifications the sector will require in the future.



³⁵ [CIWM Webinars](#)

³⁶ [CIWM Connect - A place for the CIWM community to connect](#)

³⁷ [Waste Management Courses \(ciwm.co.uk\)](#)

³⁸ [CIWM Mentoring](#)

³⁹ [WAMITAB](#)

⁴⁰ [CIWM-Green-Careers-Toolkit_FINAL-V3.pdf \(circularonline.co.uk\)](#)



From the interviews conducted the following themes have arisen that CIWM needs to consider for the future:

REPOSITION

- Reposition itself and drive the sector to focus on resources.
- Become the professional body that leads on circular economy.

DRIVE INDUSTRY SKILLS

- Set an industry agenda for skills development and create a new transferable skills framework. Recognise that a long-term view is needed to support the transition.
- Continue the work outlined in the careers toolkit to map out possible career paths within and beyond the sector, in relation to resources and waste management, to raise the profile of the sector and its potential as a viable, diverse, and attractive employment route.
- Increase the number of those seeking a waste career, rather those for whom waste is an unintentional or 'accidental' career.
- Continue to promote the benefits of working within the resources and waste sector to attract new entrants and skills.

SUPPORT

- Continue to invest in skills development for members, particularly for the 'new' skills identified that are essential for the transition.
- Use the findings of this report to inform its Learning and Development Plan and review its competency framework⁴¹ in line with changing sectoral needs
- Explore opportunities to work with other sectors and facilitate/support access to coaching/mentoring sessions for those wanting to learn more about aligning sectors.
- Support broader skills development by building partnerships to facilitating secondments within the sector, for example, working with the regulators to provide opportunities to work at waste facilities, or working with local government to provide opportunities to work with technology providers etc.

COLLABORATE

- Collaborate widely with other sectors and develop relationships with other professional bodies which will support the green recovery.

OWN

- Own this space – determine how many people work in the sector, what the sector is, what the skills gaps are and how they should be filled etc. Produce an annual skills map with input from members and collaborators. Continue to monitor skills needs, recognising that they change as new technology, policy, practices and working patterns impact the sector.
- Become the provider of choice for resources and waste management training, skills development and technical knowledge for its members, but also for other professional institutions, government and other organisations. Communicate the support and expertise available within CIWM to those whose priority or focus is not resources and waste management, but who are required to operate in this space.

"Capacity is a significant consideration in ensuring delivery of skills required, everyone is under pressure and being squeezed, so having support from different bodies is essential."

Richard Pearn, Head of Waste, Resources and Energy, Peterborough City Council

"In looking at the skills we may need moving forward, service providers need to really think about what it is they want to achieve; this level of clarity really matters if we are seeking buy-in for upskilling."

Madeleine Gorman, Joint Waste Partnership Manager, East Sussex Waste Partnership

"Recruitment can be a challenge, we struggle sometimes to get the message across to graduates and those with the skills we desire, to see that working in waste is a great opportunity to develop an exciting career & to make a real difference; we need to work together to bring about change."

Wendy Barratt, County Waste Manager, Devon County Council

"We need to keep looking and learning, thinking about whether there is a better way of doing things, lift our heads up and be brave in challenging what we think we know."

John Enright, Project Director, Local Partnerships

⁴¹ [CIWM Competence Framework](#)

WHAT CAN CIWM MEMBERS DO?



Over the next decade our sector will face some of the biggest changes we've ever been through.

CIWM members need to seize the opportunities presented by this transition by reflecting on what new skills they require and re-assessing what their role might be, whilst using the support provided by CIWM (and others) to prepare for this future.

EMBRACE THE CHANGE

- Change can be challenging, some of us will need to adapt and evolve to make the transition from waste to resources.

DO A SKILLS AUDIT

- Recognise the skills you and your colleagues will need for the future. Conduct a skills audit to determine where the gaps are and how you might fill them.

GET SUPPORT

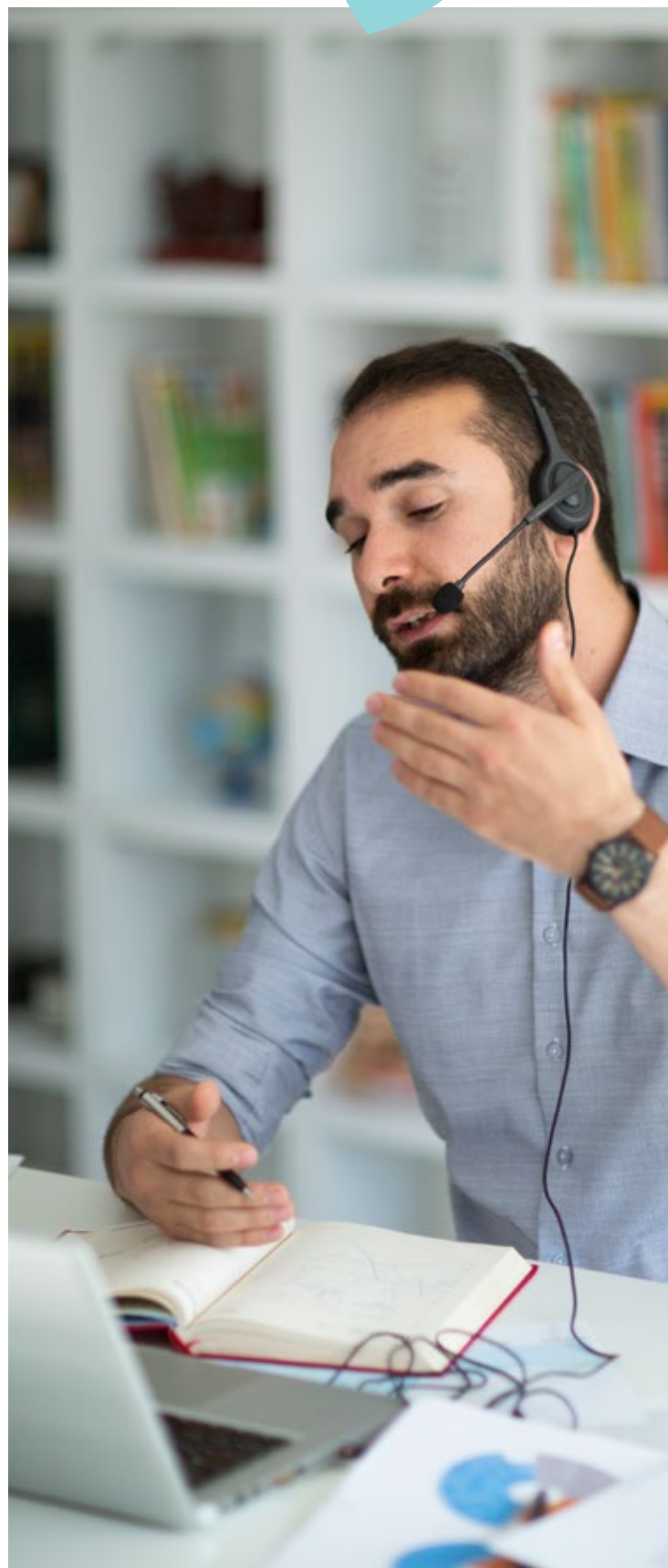
- Take advantage of the existing support provided by CIWM including the [Mentoring Platform](#), [Community Connect](#), [Webinars](#) and [Training Courses](#).
- Don't be afraid to ask for help.

SHARE YOUR KNOWLEDGE

- Share your knowledge and skills with others within your organisation or with the wider CIWM membership. Write an article for [circular magazine](#), present at a webinar, join a [Special Interest Group](#) or share your knowledge on Community Connect.

NEVER STOP LEARNING

- Over the next decade our sector will face some of the biggest changes we've ever been through. This evolution will be supported by new knowledge and skills. Dedicate time and planning to learning and invest in your continuing professional development.



SUMMARY



The next 10 years will be one of transition – a transition from our current recycling economy to one which values resources and is more circular.

A transition which will see our society become more focussed on carbon and natural capital.

Decisions about future skills, training and competencies are fundamentally about the future of the Chartered Institution and its membership. There will always be a need to manage some waste, particularly waste which has a hazardous element or can't be easily reused, but the focus in the future will be much more aligned to managing resources from production through use and then repurposing as we will ultimately manage less 'waste' in the future. Managing these resources and gaining value from them will require greater collaboration, enhanced skills and a deep understanding of a number of different sectors beyond our own. We will need to work more closely with producers and retailers, chemists and material specialists, software developers and social scientists to ensure materials, products and packaging are designed for future lives,

ease of reuse and recycling etc. As such, we will need to gain new skills but also provide our knowledge of resources and waste management to other sectors to maximise resource capture, deliver decarbonisation and enhance value.

This report is the first step of the journey. We've spoken to over 60 professionals working in and supporting the resources and waste sector to identify, which sectors we should align more closely with and what support we'd like from government to help make this happen. We've also identified the steps that CIWM (and its members) need to take to support this transition and ensure we play our role fully.

If we don't seize the opportunity now our sector will become increasingly irrelevant and marginalised as others recognise the value of materials and their ownership and move into this space. We have an opportunity to lead the way and play a key role in decarbonisation and the green recovery but we need to act quickly.

NEXT STEPS

Following report launch a number of activities are planned to disseminate the findings and importantly gain feedback. CIWM will incorporate elements of the skills map into its learning and development strategy.

SUMMER 2021

- Findings from the report are used to inform the CIWM Learning and Development Strategy.

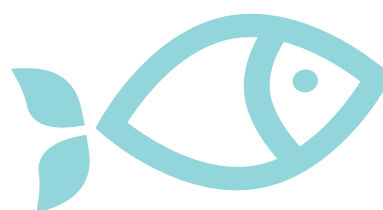
WINTER 2021

- The report is tested with key stakeholders within the sector and those in aligning sectors and reported back at Presidential Dinner (October).

2022

- CIWM Learning & Development Strategy is adapted. New collaborative training and support programmes are created. We are working seamlessly with collaborators on green recovery initiatives.

We have a significant opportunity to amplify the impact of the sector, by ensuring that we have the right skills to identify and deliver this transition, and where we don't have specific skills within the sector, that we're working with the right partners to drive the changes.



CONTRIBUTORS

A large number of stakeholders have contributed to this report by providing their views on skills for the future. The report authors would like to thank them for their time.

INTERVIEWS

The following people kindly gave their time to be interviewed as part of the report. Please note that some have opted to remain anonymous.

Abbe Lockhead, Dounreay Site Restoration Limited;
Alice Gibbs, RPS;
Andrew Sherwood, Chartered Resources and Waste Manager;
Andy Rees, Welsh Government;
Anette Dentith, Devon County Council;
Beverley Simonson, ReLondon;
Bridget Jackson, PWC;
Carl Beer, Merseyside Recycling and Waste Authority;
Ceri Turner-Bailes, WasteAid UK;
David Blair, Welsh Government;
David Warren, Welsh Government;
Dean Warren, Chartered Resources and Waste Manager;
Deborah Sacks, Department for International Trade;
Dr Tracey Leghorn, SUEZ Recycling and Recovery UK Ltd;
Eric Randle, Bryson Recycling;
Iain Gulland, Zero Waste Scotland;
Jacki Ager, London Borough of Havering;
James Kay, Resource Efficiency Wales;
Jarno Stet, Westminster City Council;
Jesse Duggal, Hampshire County Council;
Jim Perkins, Independent Consultant;
Joanne de Rouck, SERCO;

Joe Kingston, City of London;
John Enright, Local Partnerships;
Jon Hastings, East London Waste Authority;
Kirsty Spindler, South Gloucestershire Council;
Madeleine Gorman, East Sussex Waste Partnership;
Malcolm Lithgo, Environment Agency;
Maria Vinogradova, Imperial College London;
Mickey Green, Somerset Waste Partnership;
Mike Hanson, Baxter Storey;
Mike Hibbert, Independent Consultant & Trainer;
Nick Cliffe, IUK;
Nick Eva, Waste Recruit;
Paldeep Bhatti, Kent Resource Partnership;
Paul Frith, Frith Resource Management;
PJ Rudden, Aengus Consulting;
Prof Fiona Charnley, University of Exeter;
Richard Pearn, Peterborough City Council;
Simbarashe Nzozi, Sunderland City Council;
Sophie Thomas, Useful Trust;
Stuart Henshaw, Integrated Skills;
Tom Passmore, Dsposal;
Tracy Sutton, Root;
Wendy Barratt, Devon County Council.

RESOURCE COUNCIL

The UK Resources Council was formed in 2018 in recognition of the need for government to have a single body that it could talk to about policy proposals and development agendas that represented the full spectrum of secondary resources (waste) management, from collections, handling and recycling, to refining, reprocessing and secondary end uses, including manufacturers, and local economic partnerships etc. Initially tasked with securing a sector deal for the resource sector, the informal body

is now continuing to develop sectoral solutions to professionalism, technology readiness, data sharing and inward investment, and has close working relationships with the Environment Agency, Defra and BEIS.

Members of the 'People' working group provided their views on the skills required for the future and pathways that could be utilised to deliver those skills.

Ann Velenturf, Leeds University;
Anna Havard, CIWM;
Benjamin Jones, Veolia;
Carl Beer, MWRDA;
Emma Beal, WLWA;
Graham Duxbury, Groundwork;
Katie Cockburn, WAMITAB;

Lee Marshall, LARAC;
Mark Hyde, UROC;
Phillip Purnell, Leeds University;
Roger Morton, EMR;
Sarah Ottoway, SUEZ;
Steve Palfrey, Suffolk County Council;
Tammy Bristow, Uniper Energy.

CIWM SKILLS FOR THE FUTURE WEBINAR

A webinar on skills for the future was delivered on the 22 October 2020 with panellists from a range of aligning sectors. Issues discussed and delegate comments were incorporated into this report.

Webinar recording available:

<https://www.circularonline.co.uk/Webinars/a-vision-of-the-future-what-does-the-next-10-years-look-like/>

Chair – Dr Adam Read, External Affairs Director, SUEZ Recycling & Recovery UK and CIWM Senior Vice President

Sarahjane Widdowson, Director, Intelisos

Stephen Barrett, Director of Strategic Accounts, Energy & Utility Skills

Dr Colin Church, Chief Executive, The Institute of Materials, Minerals and Mining

Roger Morton, Managing Director, European Metal Recycling Ltd

CIWM COMMUNITY CONNECT DISCUSSION FORUM [MEMBER ACCESS ONLY]

CIWM community connect has a discussion forum on skills for the future and contributions to that forum have been incorporated within this report.

[Skills for the future - All Member Forum - CIWM Connect](#)



SKILLS FOR THE FUTURE: THE JOURNEY TO 2030

**CIWM PRESIDENTIAL REPORT 2021
FULL REPORT**

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**Thank you to everyone that shared their thoughts and
experiences as part of this research.**



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