

Circular.

FOR RESOURCE AND WASTE PROFESSIONALS

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Fat of the land

Do we have to give up eating meat to preserve the planet?



Implications of the ever shifting political landscape

Interview with Zero Waste Week's Anna Pitt

Are we undergoing a packaging revolution?



CIWM

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Changing landscapes

The ever shifting political landscape means the waste and recycling sector faces a number of possible futures. As we explore on pages 19-23, the Environment Bill might pass through parliament this autumn, or it might be scrapped entirely. If a General Election is called – which appeared even more likely as *Circular* went to press – and Labour gets the keys to Number 10, a revolution in local authority outsourcing could become a possibility.

Although Michael Gove's swan-song policy statement, published on 23 July, allayed fears that a new Office for Environmental Protection – which would hold the government to account on environmental matters after Brexit – would have insufficient powers, there's no guarantee a new government will press ahead with the bill as it stands.

Whatever happens in the next few weeks, flexibility and forward planning will be key for the sector as we – again – head into a political unknown.

At the same time, devastating forest fires in the Amazon hit the headlines. The 73,000 fires recorded in Brazil were, according to campaign groups such as WWF, a consequence of accelerated deforestation to clear land for cattle ranching and agriculture. Clearly, where we get our meat is a global issue, and our cover feature on pages 40-44 explores whether cutting down on animal proteins could decelerate climate change.

Food waste is another issue, which experts say is being addressed by some farmers and meat processors through reduced pack sizes and the thickness of plastic packaging, as well as vacuum packing to increase products' shelf life and reduce the amount of air transported. As we look at on pages 56-61, there appears to be a shift in focus for many businesses, transforming packaging from a corporate aspiration to a pressing commercial priority.

Liza Salazar

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Nasa's waste innovations

Advanced waste management processes will be a crucial aspect of the Artemis programme that could see human beings return to the surface of the moon by 2024, a Nasa researcher has said.

Dr Anne Maier told an RWM audience of the profound challenges and phenomenal innovation involved in such a project. For example, a heat melt compactor is being tested to recover residual water from astronauts' rubbish, such as wet wipes and juice boxes, through evaporative heat transfer. The resultant compacted brick can be used as a radiation shield.

A 'trash to gas' system developed by Nasa can also provide some of the crucial elements used in keeping space vehicles running, for example, lunar rovers, which would use liquid oxygen or methane. 'We've spent so much money and energy getting up there, the last thing we want is landfills on the moon,' said Maier.

Larac: guarded support for core material collection

The Local Authority Recycling Advisory Committee (Larac) supports Defra's plans for core material collection at kerbside 'if the evidence supports the benefits'.

This was confirmed by Larac vice-chair Dan Roberts, who addressed an audience at RWM 2019. Roberts put forward the perspective of local authorities on the recent government consultation on consistency in household and business recycling collections in England. He said that core collections could raise health and safety issues, and questioned the existence of sufficient end markets for the materials. Such a scheme would also have to mesh with ERP and DRS to be effective. Larac 'broadly agreed' with Defra's mandatory separate food waste collection for all households from 2023, but did not agree with the proposal to provide a free garden waste collection for everyone with a garden.

Food waste app launches in Northern Ireland

A new mobile phone app to inform shoppers what local supermarket food is 'reduced to clear' has been launched in Northern Ireland.

In what is thought to be a first for the food industry, Gander allows users to browse 'yellow label' reductions in real time, in a list format, or by map or store. A point of sale tracking system, developed by Henderson Technology, pushes the reduced food products to the mobile app as they are stickered in store.

When the product is sold, it is automatically removed from the app.

The app will work across the Henderson Group in Northern Ireland, which includes the Spar, Eurospar, ViVo and ViVoextra brands.

Ashley Osborne, founder of Gander, said: 'Together through this partnership, we can take significant strides towards giving retailers and shoppers alike the ability to have a more sustainable and mindful approach to food shopping.'



He also said reduced food can cost retailers up to seven per cent of their turnover, and yellow label items were 'revenue sitting on their shelves that shoppers locally would love to buy, they just don't know it is there'.

Gander is available for download from Apple and Android app stores. It is expected to be rolled out across the UK and Republic of Ireland in the coming months.

Wigan top plastic recycling town, says The Body Shop

Wigan has been named as the top plastic recycling town in the UK, according to a list compiled by The Body Shop.

The retailer has compiled a list of the top 20 recycling towns in the UK to understand national recycling habits better. It revealed that 9,000 tonnes of plastic were sent for recycling in Wigan between 2017 and 2018. The borough was listed as the top town or city, recycling almost double that of Swansea, the next closest area, where residents recycled 4,982 tonnes last year.

Of the home nations, Wales performed the best, with the most towns and cities making the top 20. Bridgend and Swansea took second and third place, respectively.

The data was compiled by analysing the amount of plastic collected for recycling from every town and city in the UK between 2017 and 2018 using municipal waste data reporting site waste data flow and cross-referencing this with the population size.

The list was published to coincide with the launch of two new initiatives from The Body Shop – Return.Recycle.Repeat and Community Trade recycled plastic.

Get vocal about festival waste

Celebrity backing of the clean-up operation could be instrumental in improving recycling rates at Glastonbury Festival, Critical Waste's Andy Willcott has said.

Speaking at RWM 2019, Willcott said recycling at the festival was 'a wacky idea' only 16 years ago but, now, the recycling effort – which started in 2000 – currently achieves around a 50 per cent rate.

Willcott told *Circular* that performers could have more of a role. 'We've had some shout-outs on stage, but they could follow it up. Glastonbury's cultural impact is huge, so that's exactly the type of thing we want to be doing.'

Although visitors were Critical Waste's 'greatest assets' in helping to keep the site clean, on Monday morning their attitude seems to change completely. 'They just want to get out of there,' he said.

● Read our interview with Andy Willcott in an upcoming issue of *Circular*.

Suez calls for £35bn waste sector transition

The waste and resources sector requires an investment of around £35bn to unlock its full potential, according to a report launched at RWM 2016.

Global waste management company Suez used the event to unveil *The Economics of Change in the Resources and Waste Sector*, which explores the outlook for the resources and waste strategy.

The report found that future environmental policy targets related to CO₂, natural capital and biodiversity will necessitate significant extra investment.

Over the next 20 years, for example, new facilities and technology capable of

converting residual waste to electrical energy, fuel and chemical molecules will be required. Logistics and container infrastructure will also need to be overhauled, and stakeholders must be prepared to collect new or niche material streams, such as flexible packaging.

New data collection and analytics systems, behavioural change campaigns, and education will also require investment, the report said.

Chief executive of Suez recycling and recovery UK, David Palmer-Jones, said: 'The money flows and economics of future resource management systems will be fundamentally different to today, in support of new objectives and through new participants in the sector, drawn in by new legislation and regulation.'

'Full net-cost recovery producer responsibility and new methods of harvesting materials, like deposit return schemes, will change revenue and material flows, and will require new consumer behaviours.'

Palmer-Jones added that the support of government would be important in meeting this investment challenge.

'Waste' label putting off women, says panel

The waste and resources industry should change the way it advertises jobs to attract more women, according to the RWM 2019 equality panel.

Jacqueline O'Donovan, O'Donovan Waste Disposal MD, said adverts generally appeared to be written to appeal to men, while Sheila Chauhan, of Veolia, suggested the industry could minimise the emphasis on 'waste' as a concept and title to appeal to a more diverse group of people.

Chair Beverley Simonson, of the London Waste and Recycling Board, identified the need to bridge the gap between the waste sector and the new environmental awareness sweeping the country, because 'that's where all the excitement is' at present.

'Strong support' for EPR principles

There is 'strong support' for the main principles and outcomes of the proposed packaging Extended Producer Responsibility (EPR) scheme, according to Defra.

Linda Crichton, who is working with Defra, told RWM the department received 713 responses to the February consultation. She said feedback had been 'positive', but respondents stressed the importance of any scheme being 'understandable and fair to consumers and businesses'. Policy interventions should also be joined up and protected against unintended consequences, they said. The proposed definition of 'full net cost recovery' was seen by some (38 per cent) to go 'beyond the polluter pays principle'.

Blockchain could secure DRS

Blockchain technology could reduce fraud and cut the cost of deposit return schemes, according to CryptoCycle CEO Duncan Midwood, speaking at RWM 2019.

He proposed a system whereby consumers could 'return' bottles and containers at home using a scanner-enabled app on their smartphones. Over time, this could promote 'deep behavioural change'.



SPONSORED COLUMN

EU tech case will impact on used goods shipments

A recent court case has implications for the shipment of 'used' products and the circular economy, says Simon Colvin, partner at Weightmans.

The recent European case of *Tronex BV* (C-624/17) concerned a shipment of electronic goods from the Netherlands to Tanzania. The shipment contained three categories of electronic goods: those in unopened packaging that had not been used and formed part of discontinued product lines; those returned by customers in opened packaging, but that were functioning; and those returned by customers because they were said to be faulty. The Dutch authority argued that the shipment constituted waste and that there had been a breach of the transfrontier shipment of waste controls pursuant to EU Regulation 1013/2006.

The Court of Justice of the European Union (CJEU) found that, if items had not been tested and could not be shown to be functioning (regardless of whether they functioned), they would be considered waste as they had been 'discarded'. If the items were functioning and had been tested, they would still be considered waste if they were not packaged, as packaging protects them from becoming damaged. Unopened goods in their original packaging should not be regarded as waste unless there were indications to the contrary.

This case has implications for those in retail and manufacturing dealing with the resale of their 'used' products in a circular economy and the reuse of goods and products.

The CJEU seems to have shown a more flexible and pragmatic approach to what should be considered waste, but that might be irrelevant in a no-deal Brexit.

Weightmans



Circular pioneer: BeeBee Wraps

For this issue, we spoke to Kath Austin, founder of BeeBee Wraps, based in Cambridge.

BeeBee food wraps are made from cotton infused with beeswax, rosin and jojoba oil, and are an alternative to plastic film wrap and bags. Each wrap lasts around a year, after which they can be burned as a firelighter or composted.

'Our wraps are reusable,' says Austin. 'You just wash them after use and they're ready to go again. This gives you more of a relationship with them as things, rather than treating them as disposable items.'

Seven years ago, as a new mother, Austin was shocked at the amount of waste that looking after a young child entailed. She began to bake her own bread, which was free from plastic packaging. The idea for reusable food wraps came when a friend mentioned that waxed cloth was a very common method of preserving food in the centuries before plastic. 'I ripped up old bedsheets, and bought a small block of wax from a local beekeeper, and started to experiment.'

After months of trial and error with different formulas in her kitchen, Austin created the first BeeBee Wrap. Keen to test its commercial potential,

she took to online craft platform Etsy. 'They flew out the door,' says Austin.

Last year, the company worked with Sky Ocean Rescue to create wraps designed by Cara Delevigne, Sienna Miller, Kate Moss and Fearne Cotton, for the #PassOnPlastic Campaign, and is working with organic food delivery service Abel & Cole.

Austin estimates the company has prevented around 7.3 million items of plastic from being thrown away.

For Austin, design and aesthetics are crucial in persuading people to buy the products. 'People respond to beautiful things. We want the presentation of the wraps to appeal to people, even if they don't initially consider the environmental benefits involved. I think that's the best way to motivate behavioural change.'

The wraps are made from organic cotton and the wax is from British bees, the welfare of which is typically maintained at a higher standard than in other countries. 'We try to be as sustainable as possible. We can't be perfect at all times, but we try hard.'

The three principles – designing out waste, keeping products and materials in use, and regenerating natural systems – were key to achieving a circular economy, she said.

SARAH POULTER

CIWM CEO

REFLECTING ON CHANGE

CIWM's CEO highlights reforms under way, as the Institution continues to respond to a fast-moving industry and members' shifting roles

I have just returned from a very stimulating few days at RWM in Birmingham and, as ever, it was exciting to see so many members there, and to meet lots of you face to face.

Thinking about the conversations I had, it struck me how important it is to take a step back from the hustle and bustle of day-to-day working life and reflect on all the activity that is contributing towards meeting your goals – both individual and those of your company or organisation.

I realised, when I did so, that the changes we're implementing here at CIWM really are driving us in a positive direction and helping us develop to become the relevant, supportive and forward-thinking Institution that you need and want us to be.

The feedback I had from many of you last week is that we are making tangible strides in our bid to embrace the changing nature of our industry and simplify and modernise our approach, our processes and our activities.

One such change is that we have simplified the CIWM grade structure, although the assessment process is as robust as ever. This will make it easier for everyone to understand the expertise of members at different grades – and easier for you to plan your own route to your desired grade.

I want to highlight one particular – and very simple – shift that affects an important group: those who are already Chartered Members of CIWM. From now on, you can choose to use a new title: Chartered Resource and Waste Manager (CRWM) when you refer to your professional status.

You asked us, as an organisation, to reflect the changing nature of our sector better, and the fact that many of you have very mixed roles that are certainly 'beyond waste'. So this is one of the ways in which we've taken your comments on board, and we hope lots of you will choose to use those new letters after your name: CRWM. You don't need to do anything official – just amend your



email signatures and wear your new letters with pride.

For all the other grade structure changes, turn to page 79, where you will find more detail.

There are a number of other new things we're doing – all of which are in response to feedback from members. We're instigating more regional activity; setting up a Members' Council that holds its second meeting in November; and we're recruiting for new trustees.

I'm also pleased to say that, so far in 2019, we have recruited nearly 500 new members.

So, as existing members of CIWM, what about your own development? How are you investing in your career to keep achieving your goals and focusing on your future?

You may have seen the Framework of Professional Standards that we launched recently, and you can find it at ciwm.co.uk/aspire

This sets out the skills you should be aspiring to secure as you progress in your career and will guide you as you work to achieve your professional goals.

Next, look out for Aspire – a tool we're preparing that will help you map your own development plan, evaluate where you are against this framework, identify gaps in your knowledge and skills, then support you as you plan your learning pathway.

Find out more about the new initiatives on the CIWM website, in *Circular* and in your weekly members' newsletter. If you would like to talk to someone, please call our membership team on 01604 620426.

CIWM is growing and developing, and we want to stay central to your ambitions as individuals and professionals.

Make the most of your membership – use it, engage with us, and let us know what else we can be doing to help you develop.

I look forward to meeting many of you in the coming months and talking about how we can all be more successful in what is, without doubt, one of the most interesting and fastest-changing sectors of industry today.

Making a difference

This year's RWM conference speaker **Anna Pitt**, of Zero Waste Week, explains how she reduced her household's waste to almost nothing, and talks about empowering others to see their 'rubbish' as a resource

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Anna Pitt has been delivering workshops to businesses and in the wider community for more than 20 years. With a BA (Hons) in education and a City & Guilds Further and Adult Education Teachers' Certificate, she's appeared on ITV, BBC News and Radio 4 promoting zero-waste strategies. She has also worked closely with Oxfordshire County Council as a Love Food Hate Waste (LFHW) champion and a trainer of champions.

Pitt has many years' experience talking to the community about how to reduce food waste, and has written books and blogs on the topic.

At this year's RWM conference, her presentation, 'Reaching the unreachable – get more people wasting less', was about helping local authorities communicate with their residents about waste reduction and pitching messages correctly for the audience.

Circular (C): How did you get into the resources sector?

Anna Pitt (AP): By accident. I was just getting on with life, bringing up my family and wanting to do it in a low-impact way, respecting Earth's resources. I tried to minimise waste, and got to a stage where I only needed to put my bin out once a year. Oddly, that made me look at what was in my bin, and why. I realised, with just a little more thought, I could probably reduce one bin a year to almost nothing – and it was a

total switch in my brain from thinking 'rubbish' to thinking 'resources'.

One day, my younger daughter came home from primary school telling me she was the only person in the whole school with a zero-waste lunch box. I was stunned. I can remember saying to her: 'I don't know if what we do really makes a difference.' And she said: 'Of course it does!' To her, it was obvious.

At the same time, my older daughter had started secondary school and we regularly entertained other children. They'd ask me where the bin was, and I had to

ask: 'What is it you've got?'

We'd replaced our general bins with recycling points. By asking how it could be used next, we knew where to put things.

Clearly, this was not what people usually did. That led me to doing the maths and measuring impact – and,

eventually, to writing my first book, *101 Ways to Live Cleaner and Greener for Free*.

C: What prompted Zero Waste Week to be launched?

AP: Zero Waste Week came from an overwhelming sense of fear when founder Rachelle Strauss was on holiday with her family in Boscastle during the horrendous floods and

“**I tried to minimise waste and got to a stage where I only needed to put my bin out once a year**”



wondered if she was ever going to see her husband alive again. It is best to get a story like that from the person who lived it, and Rachelle tells it at:

www.zerowasteweek.co.uk/about/

My part came later. By 2013, when I got to know Rachelle, Zero Waste Week had become a massive global campaign and I joined as an ambassador. After the campaign, however, Rachelle was near to burnout and spending so much time and money on it that she was seriously considering giving up her mission. I didn't want that to happen, so I started to get more involved: editing, offering support, ideas, a shoulder to cry on, and an opportunity to say yes – instead of no – when people asked her to do talks and workshops to help inspire people onto the zero-waste journey.

Rachelle loves social media, as seen by her awesome videos. I hate online communication, but give me a room of five or 500 people and I'm on fire. So, like Jack Spratt and his wife, Rachelle and I make a perfect pair.

C: What do you consider your biggest success at Zero Waste Week?

AP: Our biggest achievement is the millions of small successes. We get so much feedback from people who've made lasting changes that have reduced their waste, and that's what keeps us going.

C: What does your normal working week entail?

AP: It starts with a Skype meeting to discuss who is asking for what. At the moment, it feels like a game of tennis; we are just batting back balls to stay in the game and keep people playing. There's no way we can keep up with demand, but we use all these enquiries to work out the mood and need for the current – or next – annual campaign.

We offer consultancy to businesses to help them reduce waste, but there's a finite amount of time for this, so we are looking at ways of reaching more people in a more time- and cost-effective way throughout the year. Hence, we spend a couple of days researching, writing content and making courses that people can do at their own pace as, and when, they are ready for the next step.

Our Waste Warriors course has fantastic feedback, but people want more – so that's what we're trying to concentrate on right now.

I do talks, workshops and onsite consultancy, so I will usually spend one day a week researching, tailoring or delivering these for businesses or organisations that

Everything we create,
grow, use is a resource
and we need to use stuff,
rather than use stuff up

want to inspire their staff or attract the growing green consumer. I am all for this, as it is a far more fulfilling way of generating funding for the annual campaign than filling out grant applications.

I love it when my week includes a trip to a recycling facility. Seeing things with my own eyes helps me to inspire others.

We have to cope with a lot of doubters and naysayers, and it is much easier to deal with this side of our work when we've had first-hand experience of how things work and who is doing what.

C: Why is 'rubbish' a valuable resource?

AP: We all know we're using up finite resources. We need to realise there's no such thing as 'rubbish'. Everything we create, grow, use is a resource and we need to use stuff, rather than use stuff up. That is the only way to achieve sustainability. It is fine to use something, as long as we use it in a

way that allows us to use it over and over again. If we consider everything as a resource, it helps us to think of it as precious – and then we will think through how we can restore it to use again even before we've started to use it for the first time.

C: What one thing can everyone do that will reduce dramatically the waste going to landfill in the UK?

AP: The biggest impact is to 'pre-cycle'. Pre-cycling is thinking about something before we buy it and working out whether we can reuse or recycle it. If we can't, we don't buy it. If we all pre-cycle, companies that make products – and, therefore, use resources – will be forced to think in a circular economy way. Otherwise, they will fail.

C: Recently, the government's chief environment scientist warned that people must make lifestyle changes and shift away from consumerism if the UK is to hit its net-zero emissions target. What – if anything – does the government need to do to ensure we move to a more circular economy?

AP: We need to make the green economy cheaper than the non-green one. This needs to be underpinned with taxation and tax relief. There's so much to say here, but



Zero Waste Week founder
Rachel Strauss

an example is how the tax breaks in France for not wasting food pays for redistribution organisations. In the UK, we rely way too much on volunteers doing stuff through passion than through properly funded means of waste reduction.

C: Food waste is one of the biggest sustainability problems challenging the planet – one third of all produce is thrown away. In its resources and waste strategy, Defra says it aims to have weekly food waste collections in place from 2023, and eliminate food waste to landfill by 2030. What else needs to be done to help solve this problem?

AP: This needs to happen, but it is not enough. We need to reduce the food waste we create in the first place. Don't get me started! I've written a whole book about this and I still feel it needs another.

C: How can councils engage the public to reduce their waste?

AP: This is the question that brought me to speaking at RWM this year. I feel I need to download my brain onto a memory stick so I can share it. We have developed a system based on 'nine As and three theories', and we feel waste warriors – like our wonderful ambassadors – are key.

In short, the nine As start with awareness, go through action and end with after-effect, which mustn't be missed. Our three theories involve small steps, positivity and the power of social proof.

C: Why should educating the public about reducing waste start at school?

AP: Understanding the use of resources and how to do this sustainably is as important as literacy and numeracy. The three Rs used to be reading, (w)riting and (a)rithmetic. We have to make the sustainable use of resources the fourth 'R'.

C: Is consumer behaviour towards brands changing?

AP: It certainly is, thank goodness. At last, people want ethical! The problem is, they don't fully understand what's ethical and what's sustainable. I cringe at the 'let's shun plastic and have lovely paper or glass instead' thinking. People need to understand the impact of packaging. It needs to be about reuse and recycling, not



Understanding the use of resources should start at school

swapping one more carbon-intensive, single-use packaging for another – back to my point about the fourth R.

C: Can zero waste be achieved?

AP: I strongly believe it can. We need to get back to nature and learn from it. It is a common saying that only man creates waste. I dispute that: look at the damage mice can cause! But look deeper and think about it – they only cause waste when they make their homes in man-made stuff.

C: What are your worries around Brexit and how it might affect the resources sector?

AP: Brexit has taken over people's minds and lives. Companies are working out how they can stay afloat while our economy is taking a nose-dive. This is a huge distraction from thinking about sustainability, triple bottom-line economics and how to move towards a sustainable future, where we 'use' instead of 'use up'.

If we have to put up with it, however, let's use it to our advantage and start to buy British, reuse British, recycle British – in Britain. If we waste nothing, we need less, so we can live within our means and support the local economy. If we did this, we'd be making a global impact for the better. ●

Which way next?

What does the recent political upheaval mean for the Environment Bill and for the waste and recycling sector? **James Richards** investigates

Leaves are falling from the trees, children are back to school, the evenings are drawing in. The summer has departed and taken with it Theresa May and her government.

Boris Johnson is the new Prime Minister with a totally reshaped cabinet. Theresa Villiers, MP for Chipping Barnet, has stepped up to become Secretary of State for Environment, Food and Rural Affairs, while Michael Gove is the Chancellor of the Duchy of Lancaster. Defra's Thérèse Coffey has also been promoted to fill the gap in the Department for Work and Pensions left by Amber Rudd's resignation as Secretary of State.

What hasn't changed is the Brexit deadline of 31 October, when the UK is scheduled to leave the European Union. Equally, the political confusion and acrimony has reached new heights. At this point, an election seems likely. What now for the Environment Bill, and what does this all mean for the waste and recycling sector as a whole?

The Gove legacy: new strategy and Environment Bill

In December last year, Gove unveiled the long-awaited resources and waste strategy for England. This builds on the broad ambitions for resource and waste outlined in the government's 25-year Environment Plan.

It was welcomed for its focus on the circular economy, for embracing the 'polluter pays' principle, and committing to measures to stimulate recycling markets, including a tax encouraging the use of recycled plastic.

At the same time, the first part of a draft Environment Bill was published, which, in its entirety, will set out the government's ambitions for improving the environment. Much in the same way as the Agriculture and Fisheries Bills that have been drawn up, the Environment Bill is necessary because much of the UK's environmental legislation is derived from EU directives and regulations and enforced across member states by the European Commission and the Court of Justice of the European Union (CJEU).

This first part of the bill, therefore, is aimed at enshrining key environmental principles – such as the ‘polluter pays’ principle – in UK law and creating a new UK body, the Office for Environmental Protection (OEP), to take over the role played by the EC and the CJEU in holding the UK to account in terms of its compliance with environmental legislation, for example, recycling targets and other areas such as emissions of harmful air pollutants.

In its entirety, the bill will also put Defra’s 25-year Environment Plan on a statutory footing and set out more explicit frameworks in four key areas: air quality, nature, resources and waste, and water.

In spring 2019, the government went on to launch a series of consultations on aspects of the resources and waste strategy including a proposed Deposit Return Scheme (DRS), consistent household recycling, and Extended Producer Responsibility (EPR) for packaging. Part of the role of the Environment Bill will be to set out the powers necessary to deliver these new policy measures.

Gove used a summer policy statement – published

on 23 July 2019, shortly before the Parliamentary summer recess and before the Cabinet reshuffle – as a kind of swansong.

The statement reaffirmed the government’s commitment to packaging EPR, DRS, and consistent recycling, and acknowledged the scrutiny of the bill as undertaken by two Parliamentary committees,

published in April. Both committees criticised the bill’s provisions – for falling short of meeting current environmental standards provided by EU membership, and for failing to arm the putative OEP with sufficient legal powers.

In the summer statement, the government appeared to address these fears by confirming the body would be ‘able to bring legal proceedings against government and

public authorities, if necessary’.

● ●
**We could see the
Environment Bill passed
through parliament
this autumn, or see it
scrapped entirely**
● ●

Theresa Villiers: which direction?

This is the context in which Villiers comes into office: wheels are in motion, pieces are in play. The industry will be watching closely for any signs of her intention – will she follow the dynamics set by Michael Gove, or take the department in a bold new direction?

On 9 September, the new Secretary of State appeared in front of the Environment, Food and Rural Affairs (EFRA) committee and was asked this question. She confirmed she would ‘take up many of the causes espoused by Michael Gove’ while, at the same time, ‘hoping to put my own individual stamp on these important projects’. When asked how her policies would diverge from Gove’s, she said she was working through her plans, but ‘didn’t have imminent policy changes to announce’, although she said she would take a fresh look over some of the ‘most controversial areas’.

Villiers’ voting record suggests a mixed approach to environmental issues. Although she voted for greater restrictions on fracking in National Parks and other sensitive areas, she voted against explicitly requiring an environmental permit for fracking activities. Also, she has generally voted against financial incentives for low-carbon energy-generation sources. It’s worth noting, however, that Gove had a similar voting record when he took up the role at Defra, but exceeded the expectations of those in the resources sector.

While Villiers may be aiming for a ‘steady as she goes’





strategy, she is already under pressure to change the Environment Bill materially. In August, a group of around 40 major environmental organisations, including Greenpeace, WWF UK and ClientEarth, called for changes to the bill that would allow the public to request disclosures from the proposed OEP. In a letter to Villiers, the coalition pointed out that any authority under investigation by the OEP would need to give their consent in order for information to be released to the public, otherwise it could be withheld.

However, even if Villiers wants to deviate from the path Gove has set, the political realities around Brexit and the imminent General Election are just two of the dynamics that could severely curtail her options.

Environment Bill: election uncertainty?

As soon as the Johnson government lost its working majority in the House of Commons, a General Election became more likely. This could complicate the future for the Environment Bill in its current form. In her appearance before the EFRA committee, Villiers appeared to commit to the bill in the long term. She

Even if Villiers wants to deviate from the path Gove has set... political realities may severely curtail her options

said: 'Taking forward a ground-breaking Environment Bill is going to be hugely important if we are going to meet our environmental obligations.'

She said she was hoping to publish a revised bill soon, which was supported by a spokesperson from Defra, who confirmed to *Circular* that the government was 'still planning for the bill to be introduced early in the next session of Parliament'.

However, in the event of an election, Pat Jennings, head of policy at CIWM, points out that, there is no guarantee a new government would

press ahead with the Environment Bill as it stands. 'We would need to look very carefully at the manifesto commitments of each of the main parties during the election campaign to understand the potential impact on the Environment Bill,' she says.

Whatever happens in the next few weeks, leaving the EU on 31 October with a 'no deal' would leave the UK particularly exposed in terms of environmental governance. Indeed, one of the striking aspects of Villiers' appearance before the EFRA committee was the moment when she admitted that, as the Environment Bill will most likely not have passed before 31 October,

Brexit preparations

The EU Withdrawal Act has meant all EU laws have been brought through into UK law to ensure continuity and certainty from a legal and business perspective. Defra also worked hard ahead of the previous deadline of 29 March to ensure that the rolled-over legislation is still fit for purpose, for example in the areas critical to the resources and waste sector, such as Transfrontier Shipment of Waste rules that govern the import and export of waste.

There is less certainty, however, about the trading conditions for wastes and secondary resources that are currently exported, with the potential for tariffs and other trade-related restrictions a possibility. Other factors include the impact of currency fluctuations on export market prices for secondary materials and refuse-derived fuel, labour shortages and disruption and delays at ports.

'In the longer term, we could see the UK start to diverge from Europe in terms of the legislative framework, so the debate about guaranteeing non-regression on environmental standards (as included in Theresa May's ill-fated Withdrawal Agreement) is likely to continue for the foreseeable future,' says CIWM's Pat Jennings.

there would be 'a gap'; the proposed OEP, which is an element of the Bill, would not yet have come into being and could, therefore, not take over the crucial environmental accountability and oversight role from the EU institutions.

When challenged, she said Defra had 'put in place interim arrangements to ensure that complaints and concerns can be investigated from the start and passed on to the OEP when it's established'.

Although parliament has just passed a law taking no-deal Brexit off the table, at least for now, it would be wise for the waste and recycling sector to continue to investigate what this would entail (see the panel on 'Brexit preparations').

Labour and waste

While the Conservatives are currently ahead in the polls, it's entirely possible that Labour under Jeremy Corbyn could win the keys to Number 10 or head up a coalition government. As such, the party's policy on waste and recycling is now highly relevant.

The Labour Party 2017 manifesto does not mention recycling, but includes a commitment to setting 'guiding targets for plastic bottle deposit schemes, working with food manufacturers and retailers to reduce waste.' The policy document, *A Green Transformation*, released a year later, did not expand on the area.

In a statement in February, Sandy Martin, Labour's shadow waste and recycling minister, criticised Michael Gove for 'grandstanding on plastic pollution' when Defra's latest figures showed that the rate of packaging recycling had fallen in 2017 compared with the year before. He said that Labour was 'calling for a root-and-branch, comprehensive approach to dealing with our waste that reduces the amount created in the first place, recycles the maximum of waste that is produced and protects our environment from pollution'.

An end to council outsourcing?

In a video posted to his Twitter account in July, Martin said: 'Labour's approach to waste and recycling is to prioritise the reduction of waste and the re-use of goods first, above recycling and disposal.' He went on to criticise the practice of outsourcing local government contracts, which is a key theme of a new report entitled *Democratising Local Public Services*, published by the party also in July.

This report, and the launch speech by the Shadow Secretary of State for Housing, Communities and Local Government, Andrew Gwynne MP, held vital clues to





understanding what a Labour government might mean for the waste and recycling sector. Gwynne, who authored the report's foreword, described the practice of outsourcing to private companies as a 'racket' that wasted public money and put people at risk.

The report calls for in-house provision to be the default option for local authority contracts, and sets out criteria for when outsourcing is permitted. It also proposes strengthening the standards built into outsourced contracts, ensuring 'service delivery, employment standards and costs do not suffer when services are outsourced'. Under certain circumstances, this 'general presumption' would not apply, such as when 'significant capacity barriers' existed.

Martin pointed to the examples of several local authorities that have decided to take waste collection back in house such as Three Rivers District Council and Wear Valley District Council. 'In each of these cases, savings have been achieved,' he said.

Martin added: 'As part of our Green Industrial Revolution, Labour will move towards a circular economy with zero waste. It makes no sense for us to put the bulk of any public investment into the hands of contractors that are prioritising waste treatment over waste reduction.'

However, he confirmed that Labour was 'not ruling

out contracted services where they are specific, defined and better value for money, nor advocating arbitrary cancellation of contracts.'

Jennings observes that the insourcing-outsourcing question is a recurring debate, but decisions about services should not be made on political grounds. 'What counts is outputs, value for money and performance. Designed and delivered well, with flexibility built in to meet changing conditions in the sector, both systems are capable of providing a service that works for residents and delivers high-quality recycling,' she says.

While the political situation was unlikely to be resolved by the time *Circular* went to print, it's true to say the waste and recycling sector faces a number of possible futures. We could see the Environment Bill passed through parliament this autumn, or see it scrapped entirely. Labour could win a General Election and bring about a revolution in local authority outsourcing. Whatever the case, flexibility and forward-planning will be key assets for all parties in the sector as we head into a turbulent few months. ●

● **For more detail on the impact of Brexit on the waste and recycling sector, see *Circular March/April 'The Form of Brexit' and 'Wasted Scenarios'***

What we learned at RWM

What happens to astronauts' clothes, and where does the phrase 'mad as a hatter' come from? **James Richards** shares five things he learned at this year's RWM conference and exhibition

1 Around 75 per cent of all the aluminium produced is still in use somewhere in the world today. This is because the metal can be recycled back into itself over and over again in a closed loop. Aluminium recycling was taking place in the UK as far back as the 1940s when it was an important part of the war effort on the Home Front. Parts of the iconic Spitfire aircraft were made of aluminium, and the material is still widely used in aviation because it is lightweight compared with similar materials such as steel. Source: Novelis

2 HGV (heavy goods vehicle) drivers can feel lonely and isolated as a result of spending extended periods alone away from home, and could be particularly susceptible to depression. The 5asideCHESS Battling Suicide Bus Tour attended RWM to raise awareness within the sector and encourage people to check on their colleagues' wellbeing. Studies conducted by the mental health charity Mind have found that 30 per cent of illnesses in the transport and logistics industry are mental health-related. These figures are self-reported, so the true numbers are thought to be higher.

3 Water has been discovered in the north and south poles of the moon. This means that future human missions to Earth's satellite could use this precious resource instead of taking it up on a rocket. Water is a scarce, essential element of space travel. Aboard the International Space Station there is no washing machine, so astronauts rarely wash

their clothes despite having to do two hours of exercise every day to retain muscle density. After repeated use, the clothing becomes waste that has to be removed by shuttle.

4 Mercury is a poisonous element that can leak out of certain types of light bulb if they are not properly recycled. In humans, it can cause erethism, a neurological disorder that affects the nervous system, leading to symptoms such as low self-confidence, apathy and other social dysfunctions. In the years before this was discovered, the millinery industry used large quantities of mercury in the finishing and shaping process of hats. This is thought to be the origin of the phrase 'mad as a hatter'. Source: Recolight

5 More than 20,000 tonnes of portable batteries end up in landfill sites every year, according to recycling company WasteCare. This is likely to be around 800 million batteries, equivalent to the weight of more than 4,400 African elephants. To raise awareness of

this pressing issue, WasteCare partnered with Duracell to stage a battery hunt, recruiting 1.3 million schoolchildren from 5,500 schools across the UK. The hunt was responsible for recycling an additional 170 tonnes of used batteries. To urge people to recycle batteries, WasteCare brought a life-sized sculpture of an elephant to RWM, made from waste batteries. The elephant was

chosen as a symbol to support World Elephant Day, which takes place each year on 12 August.

Source: WasteCare ●

**More than 20,000 tonnes
of portable batteries end
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African elephants**

My working week

Refuse collection vehicle drivers **Matt Jones**, of Simply Waste Solutions, and **Kevin O'Neill**, of Cawleys, explain the challenges they face and what motivates them

What does a normal working week entail?

The main part of my week is to ensure our customers are serviced on time and efficiently. Making that a reality involves a daily routine that guarantees quality. I take a great deal of pride in my work, and I'm passionate about giving 100 per cent to whatever I'm doing.

As a driver, every day starts with carrying out vehicle checks to make sure whichever lorry I am using is safe to drive and operate. Safety plays a big part in every driver's working week. Next, I look at my day's work. This involves planning my route around timed collections and access restrictions. Once the round has been routed, I get on the road and start making my way to the first job.

Every day brings its own challenges, but I take pride in looking after my customers and that's something that rings true all week, every week.

A uniform approach would remove much confusion surrounding recycling and help us build a more environmentally sustainable future

for example. The satisfaction of completing a heavy day's work is like nothing else.

What are the main challenges you face?

In London, which is my main coverage area, I face a large number of different issues. Tight roads, heavy pedestrian traffic and heavy congestion would be top of the list. Safety for other road users and vulnerable road users is paramount, and this is always a primary concern.

A close second would be the access to bins, because London is not a lorry-friendly place, with large numbers of sites using basements and underground facilities to store bins or bags – and some requiring multiple collections per day. Planning

plays a large part in this; collections at certain times may be required to allow for access and parking.

Do you think the public needs more education about recycling?

They know the basics of how to recycle – what needs to happen is the implementation of a single, uniform scheme nationwide, rather than every borough/council having their own collection method. This would eliminate a lot of confusion when moving from area to area, where recycling schemes can differ greatly and certain items that are collected for recycling under one local authority might not be under another.

I believe this would mean a higher recycling percentage, because it would be easier for people to follow. This uniform approach would remove much confusion surrounding recycling and help us build towards a better, more environmentally sustainable future. ●

Matt Jones,
depot-based
driver trainer,
Simply Waste
Solutions



What do you enjoy about your job?

The variety it gives me is a big plus – no two days are the same. I enjoy having opportunities to train and gain experience on different vehicle types, to expand my own skills. Getting to see different parts of London that I wouldn't normally get to see – Canary Wharf,



Kevin O'Neill,
refuse driver,
Cawleys

What does a normal working week entail?

The role of a refuse driver at Cawleys is certainly a busy one – and, if you don't like early starts, it's not for you!

Every morning, I rise and shine at 3am ready for the working day. On arrival at our Luton depot, I waste no time in getting straight to my treasured truck, which I have affectionately named 'Genie',

on account of her number plate. I then get stuck into my routine checks, including oil, water, tyre pressure and standard safety equipment, and we're ready to go.

Focused directly on picking up general waste and mixed recycling from the surrounding Luton area, mine is one of the busiest waste collection routes at Cawleys. My first collection point is less than a minute's drive away – and no sooner am I in my cab than I'm out of it again. I collect the bins, get them tipped, jump back into the truck and head for the next collection point. The rest of the day continues in much the same way.

The early start allows me to quickly and easily get a head start on my round. Up until about 7am, I progress nicely on quiet roads with no distractions. Thankfully, there are no microphones in my cab to capture me singing along to Heart FM!

After 7am, the situation changes; traffic builds up and clients often enjoy a quick chat and a polite hello. By 1pm, my round is usually complete, so I head back to the depot, get Genie on the weighbridge and tip the load.

Most days follow a similar format, but – as I have been with Cawleys such a long time – it's not unusual for me to be seconded onto other jobs. This week,

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People need more education around recycling, particularly around which items can and can't be recycled
● ●

I'm covering for a colleague driving rear-end loaders at a Luton airport site.

What do you enjoy about your job?

Having been employed at Cawleys for more than 20 years, my enjoyment of the job speaks for itself. As a self-confessed truck enthusiast since childhood, driving one every day still makes me smile. I also enjoy peace and quiet, and the tranquillity of the truck in the early hours, with the contrast of seeing so many of our long-standing customers

each day for a cheery hello. Also, because I'm in and out of my cab so much, the job goes a long way to keeping me in shape.

● ●
The role of a refuse driver at Cawleys is certainly a busy one and, if you don't like early starts, it's not for you
● ●

What are the main challenges you face?

The trickiest thing is probably some of the driver skills that are needed to squeeze into tight spaces or access difficult-to-reach collection sites. The obvious aspects, such as extreme weather and traffic, can also make the

job a little frustrating at times.

Do you think the public needs more education about recycling?

Definitely, particularly around which items can and can't be recycled. Cawleys' infinity scheme is focused on segregating key items for recycling, but this only works if contamination is kept to a minimum and the right waste items are put into the right bags. ●

Watching the waste line

To improve recycling performance and cut greenhouse gas emissions, Wokingham Borough Council launched a food waste collection service in April. The council's specialist – waste management and education, **Irum Gulzar** MCIWM, reports

With an ongoing industry debate about the government's resources and waste strategy, mandatory food waste (FW) collections are one ball hit in the right direction (subject to consultation).

Wales, with a 57 per cent recycling rate, already has mandatory FW collections, and Scotland aims to ban biodegradable waste going to landfill by January 2021.

Recycling performance isn't the only driver; climate change is high on people's agenda and FW has a considerable carbon footprint – and, in landfill, is a significant source of greenhouse gasses. Under pressure to balance budget reductions, improve recycling and waste management performance, and reduce greenhouse gas emissions, Wokingham Borough Council (WBC) launched a new FW collection service this April.

The service

The current service is delivered by Veolia Environmental Services and, as a unitary authority, WBC is also responsible for waste disposal. This it does through Re3 – a partnership with Bracknell Forest and Reading Borough Councils, contracted to FCC.

Lessons learned

WBC did not provide a delivery schedule for the FW caddies – unlike the refuse sack deliveries – resulting in calls when deliveries were slightly delayed into April.

Some communication channels are not as effective unless tailored to suit the local needs, for example bus shelter adverts were costly and had minimal impact.

The cost effectiveness of the new service/service change can be increased when coupled with a new contract or contract extension. Wrap and Eunomia provided invaluable support throughout.

WBC is the first of the partnership to introduce FW collections. It has weekly waste collections using blue, 90-litre, WBC-branded bags and 55-litre black boxes for recycling. Most waste is sent to the Colnbrook energy-from-waste plant in Slough, and only nine per cent is sent to landfill. The recycling rate for 2018/19 was 40.3 per cent – 21 per cent from kerbside collections and 32.3 per cent from household waste recycling centres. By recycling FW (plus seven per cent) and wood (plus six per cent), WBC anticipates to achieve the 50 per cent statutory recycling target by 2020.

A compositional analysis of WBC's residual waste indicated 10,000 tonnes was FW, and it was estimated that at least half of this could be diverted. Every tonne of waste diverted to recycling saves £100, and diverting 5,000 tonnes could save £500,000 per year.

The collected FW goes to Severn Trent Green Power (previously Agrivert) for reprocessing via anaerobic digestion (AD), and the service is geared to be break-even, with the savings reinvested in the system.

WBC currently has 69,000 properties, of which 64,000 received the FW service. Flats will be included in the second phase from September 2019. Every household received a five-litre indoor kitchen caddy, a 23-litre outdoor lockable collection container, a roll of 100 free liners and a service leaflet.

The council considered three scenarios: no liners; polythene liners; and compostable liners. After consultation with contractors, Severn Trent, Wrap and Eunomia, WBC chose polythene liners to encourage higher participation and because compostable bags are incompatible with the AD process.

Results

In the first three months, 1,198 tonnes of FW was collected – an average of 18 tonnes per day, or 95 tonnes a week. WBC achieved and maintained its target of 1.46kg per household per week (kg/HH/wk), occasionally reaching a peak of 1.53kg/HH/wk (see Figure 1). In addition, there was a reduction in waste of

214 tonnes, compared with the same period last year, saving around 2,000 tonnes of CO₂e.

Challenges

The 1.46kg/HH/wk target for weekly waste collections using bags was a major challenge because WBC has limited control on the residual waste generated. On the one hand, it limits the number of (free) blue bags to 80 per year, but – on the other hand – it allows residents to buy more if they run out before the start of next year's delivery.

Cooking oil was included with FW to increase tonnage, and this improved performance.

The FW service started on 1 April 2019 to coincide with Veolia's contract extension. A few teething issues were caused by moving depot twice in six months and

route optimisation, resulting in significant changes in garden waste collections, as well as collections from communal properties. This took place at the same time as the annual blue-bag deliveries and annual garden-waste subscription renewals, when many householders exchange their garden waste bins. This put more pressure on WBC frontline staff and Veolia.

Since the launch, a local supermarket has caused some confusion by saying compostable packaging can go in with FW, contrary to information from WBC.

Communication and early engagement with residents paid off – WBC consistently said services would start from April. After the rollout, social media was used to engage people about the tonnages collected. This created interaction among residents, who teased each other for generating so much food waste. ●

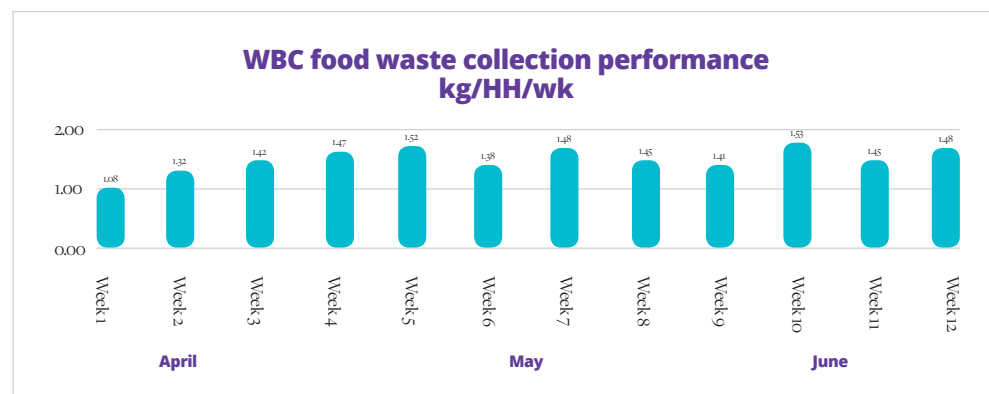


Figure 1: WBC food waste collection performance

Communication is key

An FW project working group met monthly between May 2018 and March 2019 to assess issues and progress all aspects of the rollout, including supporting communications.

WBC began communicating in September 2018 – to coincide with national Recycle Now week – and continued through to April 2019 using various channels:

- The 'free' borough newsletter
- A communications plan, FAQs and training material, produced by Eunomia, which advised on other literature and delivered training to staff
- Wrap's free resources library was used for service leaflets, posters, pull-up banners and vehicle livery.
- Information regularly posted and updated on WBC's website from Christmas 2018
- A teaser leaflet distributed with WBC's annual blue-bag delivery before the FW service launched
- The outdoor caddy lid had a 'No food waste packaging' sticker to reduce contamination, and the indoor caddy liners also had FW information
- Posters and information displayed in parish and town council offices, as well as local supermarkets
- FW messages displayed on roundabouts
- Press releases and social media (WBC and Re3)
- Five roadshows between February and March 2019.

No smoke without fire

Natalia Reyna-Bensusan, David C Wilson and Stephen R Smith, of Imperial College London, explain the hidden impacts of uncontrolled burning of waste

Open burning of solid waste is a significant source of air pollution and a common practice in many economically developing regions of the world.

Globally, around two billion people lack access to municipal solid waste collection services and, typically, they dispose of household waste by open burning.

Uncontrolled waste combustion releases emissions of black carbon (BC), commonly known as soot, which has harmful effects on air quality, health, ecosystems and agricultural productivity. Black carbon is also an extremely powerful climate pollutant, with a global heating potential up to 5,000 times greater than carbon dioxide (CO₂).

Similar to methane (CH₄), BC is a short-lived climate pollutant, which means it remains in the atmosphere for much less time than CO₂. Action to control emissions by stopping open burning of waste would, therefore, have a significant and immediate benefit in the fight against climate change.

The contribution to global CH₄ emissions from the landfill disposal of biodegradable waste is well established. It accounts for most of the direct contribution of the waste sector to climate heating, as estimated in the most recent (fifth) assessment by the Intergovernmental Panel on Climate Change (IPCC), the United Nations body for assessing the science related to climate change.

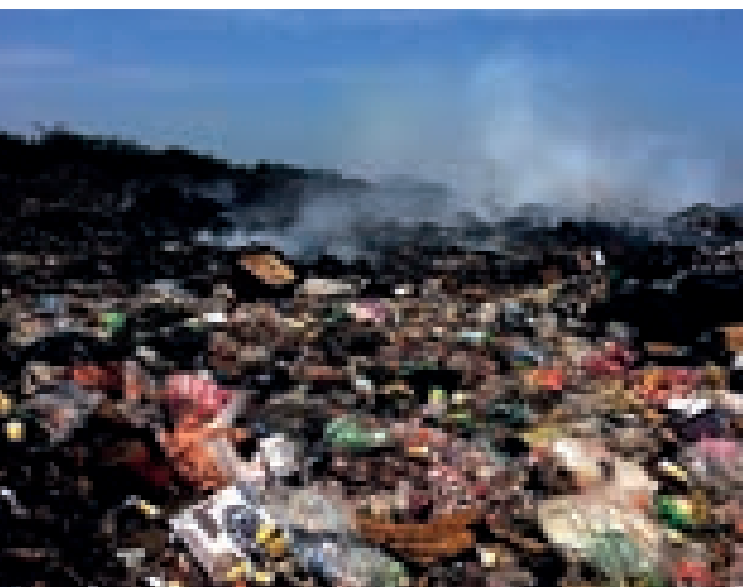
Practices and policies to reduce CH₄ emissions from the waste sector are present in many countries. In Europe, for example, CH₄ emissions from solid waste dropped between 1990 and 2010 in response to the Landfill Directive. This required member states to reduce the amount of biodegradable municipal waste disposed in landfill to 35 per cent of 1995 levels by 2016. In some countries, such as the UK, which relied heavily on landfill for more than 90 per cent of municipal waste disposal, the directive allowed a derogation to 2020.

Measures to control CH₄ emissions from landfill disposal are gradually being introduced in economically developing countries, too. However, this strongly contrasts with the lack of research on – and environmental measures to reduce – BC emissions from uncontrolled open burning of waste in developing, as well as developed, countries.

For instance, BC emissions from open burning of waste are not included in most emission inventories used to model and develop national or international climate change mitigation policies. The main reason for this, apparently, is the scarcity of measurements to determine the impact of BC emissions from open burning of waste on health and climate change.

Quantifying emissions from open burning of waste requires information to be collected on two key aspects. First, the activity level, in terms of the amount of waste that is disposed of by burning and, second, the emission factor. This is a measure of the amount of a specific pollutant that is emitted to the atmosphere per unit weight of material burned.

Measuring the emissions released from open burning under field conditions is technically challenging and difficult to control



experimentally. Consequently, very few field data have been reported. An alternative, more practicable and controllable approach is to measure emissions for different burning materials through carefully designed laboratory simulations.

Research

To better understand the impact of open burning of waste on climate change, and generate reliable data to address this information gap, I carried out a PhD research programme – co-supervised by Professors David C Wilson and Stephen R Smith, of Imperial College London – to measure the extent of BC emissions from uncontrolled waste combustion. The results have been published in two peer-reviewed journals.

The research involved gathering activity data for waste disposed by open burning, using Mexico as a case study area.¹ The activity levels for – and the factors controlling – open burning were determined from a combination of household surveys, interviews with waste operators and key stakeholders, and by waste characterisation analysis.

The research also involved measuring emission factors for BC from burning mixed solid waste samples in the laboratory, based on waste compositions found in the case study area.²

Black carbon emission factors were also derived for individual waste types, including: green waste; different types of plastics; textiles; and paper and cardboard. Individual waste BC emission factors were combined using waste-composition data from different areas of the world to estimate regional and global BC emissions from this source.

The results showed that the largest BC emissions were obtained for mixed waste samples containing polystyrene and

polyethylene terephthalate (more commonly abbreviated to PET and often used to make drinks bottles).

These two plastics represented only a small fraction of the waste – five to 10 per cent – but contributed up to approximately 90 per cent of BC emissions. Textiles, which include synthetic fibres, were also a significant source of BC emissions.

The measured emission factors were combined with previously

published field data on the extent of open burning, waste composition and activity levels around the world. This showed that the contribution of BC from the open burning of waste to global heating is in the range of two to 10 per cent of global carbon dioxide equivalent (CO₂e) emissions.

The study also showed that global BC CO₂e emissions from burning waste are two to eight times larger compared to CH₄-related CO₂e emissions from the decomposition of

● ●
**Open burning could
double the waste sector's
direct contribution to
global heating, compared
with IPCC estimates of
two to five per cent**
● ●



equivalent amounts of combustible biodegradable waste disposed at dumpsites.

Our results show that open burning could more than double the waste sector's direct contribution to global heating, compared with current IPCC estimates of two to five per cent based on CH₄ alone.

In many developing regions of the world, especially in rural areas, access to an efficient, sustainable waste-management system will probably not be achievable in the short term. However, extending waste collection to everyone, and eliminating open dumping and uncontrolled waste burning, would bring immediate benefits to the local environment, to the health of the population of the region, and to global climate change mitigation.

Unless addressed, this problem is set to worsen, because the disposal of waste is expected to increase by 70 per cent by 2050. Eliminating, or at least decreasing significantly, waste disposal by uncontrolled burning would be a relatively 'quick win' in tackling the global climate emergency.

Our results also show that many of these benefits – both to mitigating global heating and reducing dangerous air pollutants – could be achieved by ending the uncontrolled burning of plastics, in particular polystyrene, PET and synthetic fibres. PVC could also be added to the list because of its chlorine content and contribution to toxic emissions.

This is true in those developing countries where most uncontrolled waste burning takes place currently, but also in developed countries, such as the UK, where plastics are commonly burned on household – and public – bonfires. ●



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Give and take

Claire Poole, professional development manager at CIWM, explains how mentoring can be beneficial for both parties

In the context of CIWM membership, mentoring is a two-way relationship that supports and encourages an individual to identify and undertake self-managed learning to develop their skills, knowledge and industry awareness in preparation for Chartered Membership.

Mentoring should be a positive relationship for both parties; the mentee will drive the relationship primarily, as they should take responsibility for their own development. The mentor's role is to act as a guide, supporter and sounding board, to discuss, guide and challenge the individual's development.

The mentor does not have to be the individual's line manager. For the purpose of becoming a Chartered Waste Manager, it may be that more than one mentor is needed at different stages of their career.

One mentor might be needed to help with development planning allied to the job role/area of specialism. A different mentor may be needed to help work on any gaps relevant to the Chartered Membership criteria and preparation leading up to completing the Chartered Membership application and professional interview.

Top tips for a mentor:

- 1 Listen – active listening is required
- 2 Use open questions – help your mentee explore what they know and their opinions
- 3 Motivate – help a mentee to stay focused, even when the day job takes over, and see the progress being made
- 4 Challenge – encourage a mentee to step out of their comfort zone, tackle things in different ways, try new skills, or consider topics from a different perspective
- 5 Agree goals and timescales – various models can help with goal-setting, but they should be 'smart':
 - **S**pecific – clear as to what is to be done
 - **M**easurable – has it been successful?
 - **A**chievable – can it be done within the allotted timescale and with available resources?
 - **R**elevant – how does it fit with the Professional Standards/Chartered Competences?
 - **T**imely – set realistic timescales, taking into account workloads (of both parties) and deadlines for upgrade applications, if applicable.

The 'grow' model is a useful tool for identifying goals. For further guidance, the 'achieve' model breaks up the goal-setting and problem-solving processes into steps, and allows for more detailed consideration of the situation.

Keep an eye out for further information in *Circular* and/or the Knowledge Centre for details on these models.

The role of a mentor is not just to impart knowledge, but to help the mentee build their own knowledge and apply it. The mentee should become self-reliant and develop important lifelong learning skills, including networking, and the benefits of continuing professional development (CPD).

A mentor will also be developing skills, including how to give feedback, and may even learn something, such as technical updates and improved interpersonal skills. And, in this situation, it can count as CPD. ●



Meat of the matter

A recent IPCC report said cutting down on eating meat would ensure more people could be fed using less land – but should grass-fed cattle be part of the equation for a balanced diet? **Chris Elliott** investigates

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Recent forest fires in the Amazon, which have been linked by campaign groups to deforestation for agriculture and cattle rearing, highlight the fact that meat provenance is a global issue.

In the past few years, there has been a shift in people's eating habits, researchers claim, with vegetarianism and veganism on the rise, and meat losing ground.

Even so, meat consumption is still way out in front in the food stakes, according to the UK's Agricultural and Horticultural Development Board (AHDB), with 95 per cent of people eating it once a week or more.

However, a survey released last year by consumer organisation Kantar – which questioned 10,000 people across the UK – revealed that 29 per cent of evening meals served up in 2017 contained no meat or fish.

There are many reasons why some people have turned away from meat. Many believe it's much healthier to eat fruit and vegetables than beef, pork and lamb. Others feel uncomfortable about slaughtering animals, and some fear meat sold in supermarkets or butchers' shops may have been reared under poor welfare conditions.

There is also the bigger picture: the impact of meat production on the planet – and the debate about this is gathering pace.

A few weeks ago, an international report on land use warned that high demand for meat is contributing to climate change. Compiled by more than 100 scientists for the United Nations' Intergovernmental Panel on Climate Change (IPCC), the document said that if the world cut down on eating meat, more people could be fed using less land – and, if land is used more effectively, it can trap more of the carbon emitted by humans.

Plants absorb CO₂, making soil the second-largest store of carbon after the oceans, but poor farming practices and deforestation can lead to soil being degraded, releasing the CO₂ back into the atmosphere.

One of the report's contributors, Professor Peter Smith, from the University of Aberdeen, said in a broadcast interview: 'It's really clear that land is being degraded through overexploitation, and that's making climate change worse.'

The IPCC report comes just over a year after the publication of a highly detailed study analysing agricultural land use worldwide. It pulled together a huge range of data on nearly 40,000 farms in 119 countries, covering 40 food products representing 90 per cent of all that is eaten.

The research established that 26 per cent of global emissions come from food, and 58 per cent of food

emissions come from animal products – with half of all farmed animal emissions coming from beef and lamb.

Joseph Poore, of the University of Oxford, who led the project, spoke to *Circular* about the work, and says a vegan diet is probably the single biggest way to reduce humanity's impact on the planet.

'Much of the deforestation of the Amazon rainforest has been for farms that produce beef for the local South American market, and for soy to feed pigs, especially in Asia,' he says. 'The deforestation has largely taken place because many humans prefer the taste of animal proteins to vegetable proteins.'

'In total, agriculture occupies more than half the world's land and, since 2000, we've lost an area of tropical forest the size of the UK, Ireland, Belgium, the Netherlands, Germany and Poland combined to agriculture.'

'As well as releasing carbon into the atmosphere, this has serious consequences for wild animals. There are 13,000 known species threatened with extinction because of agriculture.'

●●
**The bones of chickens,
60 billion of which are
farmed and slaughtered
every year, are steadily
accumulating below ground**
●●

'As the Earth's population increases, the need for food is growing all the time. By 2050, the forecast annual consumption of meat will be 500 billion kilograms.'

Poore's message has been taken very much to heart in some quarters. Goldsmiths, University of London, is removing all beef products from sale on its campus from September, as part of efforts to become carbon neutral by 2025. Students will also have to pay a 10p levy on bottles of water to discourage use of plastics.

Vival, the animal rights group that focuses on promoting veganism, says 3 per cent of the British public identifies as vegan. A spokeswoman says: 'Thirty-three per cent of the population is also cutting down

on – or cutting out – meat. Vegan diets result in 45 per cent less land use and 51 per cent less greenhouse gas emissions.'

Going to waste

As well as the demands to curb meat production, there's another conundrum: how to prevent huge amounts of it going to waste.

Research by the circular economy organisation Wrap discovered that mountains of fresh beef and lamb are discarded before sale and in the home because the meat has become discoloured, and people don't feel happy about eating it.

The change in colour, from red to brown, is caused by the meat oxidising, and some householders think this means it has gone off. In fact, it is still perfectly safe to cook and eat, provided it is within the use-by date.

A spokesman for the British Meat Processors Association says a protein called myoglobin, which stores oxygen, makes meat red. As the meat loses its oxygen content while stored, its redness starts to disappear.

Householders in the UK throw away 34,000 tonnes of beef each year, the equivalent of 300 million beefburgers, according to the national Love Food Hate Waste campaign. When meat is wasted, all the valuable resources that went into its production are wasted too, the campaign says – plus, there's all the packaging to collect and recycle.

Many animal carcasses end up in landfill and, in future, will provide a fossilised record of humanity as we are today. The bones of chickens, for example – 60 billion of which are farmed and slaughtered every year – are



Where do farmers stand?

NFU vice-president Stuart Roberts says: 'The NFU has been clear that our aspiration to become net zero – reducing our greenhouse gas footprint and offsetting emissions – by 2040 does not mean downsizing livestock production. This would only export our production to countries that may not have the same standards of environmental protection.'

'Our plan for achieving our net-zero goal is focused on making the most of our natural resources. With 65 per cent of UK farmland best suited to growing grass, this means using our grasslands – which are also a huge store of carbon – to produce high-quality beef and lamb.'

'British farmers are determined to continue reducing methane emissions through a variety of methods, including dietary changes and breeding techniques. Alongside this, we are looking for ways to continue to improve soil health and increase organic matter within our soils, which is one of our greatest assets.'

'With last year's weather extremes and the recent flooding in Yorkshire, there is no denying that we are already seeing the impacts of climate change, and it is encouraging that the report recognises the threat the climate poses on food security. We now need to see government policies that will support the farming industry in delivering on its net-zero ambition.'

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steadily accumulating, and mummifying, below ground. Humanity's impact on the Earth is now so profound that geologists have proposed a new geological epoch – the Anthropocene – which is likely to be defined by the bones left by the global proliferation of the domestic chicken, among other signals.

The AHDB, which is funded by levy payments from farmers and growers to help the industry improve, insists the issues are being tackled. Its beef and lamb technical expert, Christine Walsh, says: 'Producing meat helps to reduce waste across the broader supply chain, with by-products from food and drink production used to supplement animal feed. Furthermore, by-products from the meat industry are used in the fashion, pharmaceutical, aerospace and energy-generation industries.'

'AHDB levy payers, both farmers and meat processors, report that they are working hard to reduce waste and to better align their products with what the modern consumer wants. They're constantly using innovation to drive improvements.'

After investment in new technology, renewable energy is generated at many meat-processing plants, says Walsh. The AHDB cites food company ABP's Ellesmere abattoir as a good example of this.

Heat generated as part of the abattoir's refrigeration process is recycled and then used as a heat source across the site, an AHDB spokeswoman says. The combined heat and power unit runs on a combination of biofuel derived from tallow – produced from fats from animals slaughtered on site – and biodiesel.

'Commitments have also been made to send zero waste to landfill,' Walsh says. 'To reduce consumer waste, they have introduced smaller pack sizes to cater for the increasing number of one- or two-person households.'

'The thickness of plastic packaging has been reduced and they have

minimised the use of packaging while meat is processed. Moving to vacuum packing has increased the shelf life of products, and reduced the amount of air transported within packaging. Research is looking to drive further reductions in packaging, improve shelf life and increase recyclability in the future.

'Everyone must make their own decisions on how they can effect change, but these must be based on facts and evidence, rather than rhetoric and misrepresentation.

'In recent years, livestock production has become an easy target, with the end message that people need to cut their red-meat intake to help save the planet. Yet, on closer inspection, the facts simply don't stack up – particularly when you look at it from a UK perspective.

'The UK is one of the most sustainable places in the world to produce red meat because of our climate, topography and our long history of managing livestock on the land. Very few additional inputs are needed to produce red meat

because grazing livestock turn naturally occurring grass into proteins that humans can eat and easily absorb.

'Ruminants – sheep and cattle – help manage permanent pasture as an



UK householders throw away 34,000 tonnes of beef each year



effective means of absorbing carbon from the environment, while aiding biodiversity, putting organic matter back into the soil.

'If they were taken off the land, it would result in swathes of our countryside being taken out of the food production system, at a time when we need it to support a growing population.'

More information about the AHDB and its research can be found at www.ahdb.org.uk

The Love Food Hate Waste campaigners want people to be more savvy about meat buying. A spokesman says: 'Meat products, like most foods, can be frozen right up to the use-by date – so, even if plans change at the last minute, people can "press pause" on their food by putting it straight in the freezer.

'Freezing is also a great option for cooked meat. If there is some left over after a meal, keep it in the freezer to include in a casserole or stew another time.

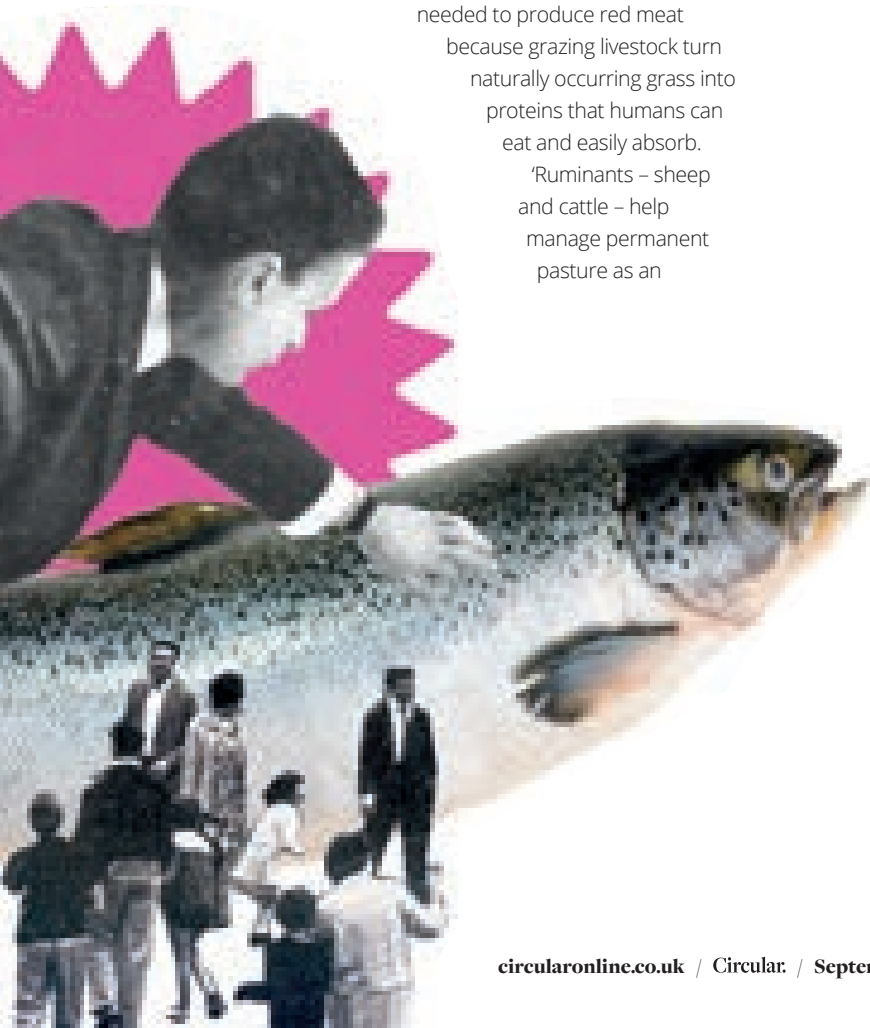
'Portion planning can help to reduce waste. One of the main reasons meat gets wasted is because people cook, prepare or serve too much – this is especially the case with poultry. Checking exactly how much you need before you shop and cook can stop this from happening.

'It's important also to check what you've already got before you buy. Thirty per cent of people don't check their fridge before they shop, and almost half of people forget to check their freezer.'

Balance is, perhaps, the answer. The IPCC's report says we need to eat a balanced diet that contains less meat, and the Eating Better Alliance calls for a 50 per cent cut in meat consumption by 2030 because a large amount of livestock is fed on feeds that come from around the globe, causing deforestation.

However, because two-thirds of UK farmland is under grass – and, in most cases, cannot be used for other crops – could the best way to turn it into food be grazing it with ruminants and cutting out meat fed on grains? On the other hand, animals create a lot of methane – one of Earth's most potent greenhouse gas emissions.

The debate around eating more meat from grass-fed systems or reducing meat consumption is ongoing. The one constant, however, is the need to waste less food, particularly meat – which is something everyone can agree on. ●



PHILLIP PIDDINGTON

STAYING ON TRACK

Rapid change can have unforeseen consequences, so working with the new Environment Secretary will be imperative to developing proposals in the waste and resources strategy, says the ESA chairman

Our political landscape remains extremely fluid, with the appointment of a new Prime Minister and cabinet shortly before Parliament rose for the summer recess.

Theresa May's administration – with Michael Gove as Environment Secretary – was in tune with strong public awareness and momentum to place the environment, and managing our waste resources more sustainably, at the heart of its agenda.

We must hope that the new incumbents around the Cabinet table – including Chancellor Sajid Javid, Business Secretary Andrea Leadsom, Environment Secretary Theresa Villiers, and Gove himself – continue to build on this work.

Defra's resources and waste strategy sets out a positive and powerful direction for our sector; but we need the new administration to develop the detail of how it will work in practice. We also need the support of the Chancellor and other senior ministers to ensure the Environment Bill is brought forward later in the year, as previously intended.

This bill will be crucial to setting out the framework for the environmental sector in a post-Brexit world, including the primary legislation required for the government to enact measures proposed in the resources and waste strategy.

Towards the end of the May government, I and other industry leaders met the (soon to be) outgoing Environment Secretary. We informed him of our collective support for the ambitions contained in the strategy, and our willingness to invest £10bn over the next 10 years in the services and infrastructure we need to make the government's vision a reality.

As part of this, there are some key policy areas that are critical to creating the conditions we need to support infrastructure investment by our industry. First, we need to improve the consistency of the inputs that arrive



at our recycling facilities. This means eliminating difficult-to-recycle forms of packaging, and bringing forward consistent collections proposals much sooner than 2023 so that, together, we can reduce the appallingly high levels of contamination we see in the recycling stream.

Second, we need policy to enable the industry to invest in the 200 new recycling plants we require to achieve the higher targets embedded in the strategy, as well as the recovery facilities for our non-recyclable wastes.

This means ensuring measures, such as a reformed producer responsibility system, contain long-term contracting options against which the industry can invest. Removing the current uncertainty over timescales in planning and environmental permitting would also help to unlock infrastructure investment.

Finally, we need policy that encourages and supports domestic markets for recycled materials. The government's proposed plastics tax is an excellent start, but we could do a lot more. Measures, such as a Deposit Return Scheme, must be implemented with a focus on providing materials for domestic facilities, re-shoring valuable economic activity that could otherwise remain overseas.

The government's strategy rightly sets out a number of radical proposals to alter the UK's use of resources. Experience, though, tells us that periods of rapid change can have unforeseen consequences. It is vital, therefore, that the industry – with its track record of delivering investment in UK recycling and recovery – has the opportunity to work with the new Environment Secretary on further development of detailed proposals under the resources and waste strategy.

Together, we can achieve the much more resource-efficient, viable and zero-carbon economy of the future to which the UK is committed, and which we all support.

We need policy that will enable the industry to invest in the 200 new recycling plants we require

Government must analyse evidence by looking holistically at full package of measures

Jakob Rindegren, recycling policy adviser at ESA, analyses the government's response to the resources and waste strategy consultation

What came out of the summary of responses to the three resources and waste strategy consultations, plus the one on plastics tax?

Defra and, in particular, the HMRC were relatively non-committal. But Defra's commitment to taking forward legislative proposals on full-cost recovery Extended Producer Responsibility (EPR) for packaging – with incentives for recyclability, and including household and household-like packaging – is welcome and supported by the ESA.

Despite Michael Gove's recent comments about a Deposit Return Scheme (DRS), the next steps – set out in the summary – made this sound less definite. Further work is needed, including on the value of reductions in litter and impacts on secondary materials markets.

ESA members have flagged up concerns about accessing the collected material, which risks holding back much-needed investment in reprocessing. There was overwhelming support for more consistency around what is collected, linked to a harmonised, national labelling system.

The response on food waste was less clear, with support for at least weekly food waste collections, as well as for

exemptions in certain circumstances, in particular for flats.

Finally, the summary of responses on a plastics tax gave the fewest clues on the way forward, other than strong support for a tax and significant opposition to excluding imports.

It is worth noting that the summary simply quantified the responses, with strong representation from local authorities, which reflected the feedback. It will, of course, be critical for the government to analyse the available evidence to support whatever proposal is taken forward – not simply to look at each consultation individually, but to take into account the full package of measures and how they impact on each other.

This won't be easy, but is, arguably, necessary if we want to ensure a more joined-up, strategic approach to managing our resources better. It also needs to be done with a clear focus on the outcomes and by not losing sight of which system will deliver the greatest carbon benefits and potential to increase resource productivity in the UK.

ESA stands ready to support the government in this work, and we encourage Defra and the HMRC to work closely with our industry when adding detail to the legislative proposal to be consulted on next year. ●

Scotland's programme for government

The Circular Economy Bill is an exciting prospect, says Stephen Freeland, but timescale for DRS launch now seems too ambitious.

The Scottish government has published its legislative programme for 2019/20, with plans to tackle climate change the centrepiece of its ambitions over the next 12 months. Within the programme are proposals for a Circular Economy Bill and measures to get Scotland's recycling rates back on track.

The Circular Economy Bill is an exciting prospect and we look forward to seeing a set of sensible, practical proposals. As experience shows only too well, however, high and ambitious recycling targets alone are not enough to drive Scotland's transition to a circular economy. We suggest the bill includes measures that will help increase and sustain demand for the recyclable materials that are collected. Expanding domestic reprocessing capacity should also be a priority.

The Scottish government seems wedded to having a Deposit Return Scheme up and running by 2021, which appears ambitious given the time needed to invest in logistics and infrastructure. Engagement with the waste management industry has fallen well short of expectation, which is disappointing, and a single, UK-wide scheme now appears unlikely, which will probably lead to higher costs for the supply chain and consumers.

A review of Scotland's separate food waste collection requirements is long overdue and, therefore, welcome. The rural exemption needs to be looked at to ensure much more of this valuable resource is captured and recovered.



Executive director's update

EfW must be part of the solution when it comes to sustainability, so changing perceptions about the technology is imperative, says Jacob Hayler

While we, in the industry, are aware of the importance of energy from waste (EfW) as an alternative to landfill for the treatment of our non-recyclable wastes, this is still not the case for some politicians and the public.

A small, but vocal, anti-incineration sector serves to undermine positive images of our facilities and to maximise the difficulties faced by operators trying to develop new EfW plants.

In this context, there are three fundamental questions the industry needs to ask itself about the future role of EfW.

The first is, how do we change the perception of EfW among the public? These facilities are recognised as an integral part of the solution for sustainable growth in other parts of northern Europe and we need to build the same recognition here.

The second question for EfW is, how do we build more facilities? Contrary to the former environment minister Thérèse Coffey's ongoing proclamations that we don't need investment in EfW capacity, we – in the industry – know

that the opposite is true. Coffey qualified these statements by saying we don't need any more investment to meet future targets. But these are the same targets that will continue to allow six million tonnes of mixed waste to go to landfill in 2035 – potentially more if Defra's heroic assumptions about zero-waste growth prove to be optimistic.

The third big question for EfW is, how do we decarbonise this sector in the short and long term? In the short term, this means making better use of heat – ensuring our plants are located next to industrial heat offtakers where possible, and plugging into heat networks where the Department for Business, Energy and Industrial Strategy (BEIS) is able to get them to work.

In the longer term, we will need to work out EfW's role as part of a zero-carbon economy, potentially through decarbonising the feedstock or through capturing the back-end CO₂.

Too many lay people – including politicians – view EfW as part of the problem, rather than part of the solution, when it comes to sustainability. We must all redouble our efforts to change this perception, and demonstrate that we need solutions for the recyclable and the non-recyclable parts of the waste stream.

PAUL VAN DANZIG

REDUCE, REUSE, RECYCLE... REPLACE?

A new tier appears to have been introduced to the waste hierarchy that could have far-reaching and unintended consequences, says the policy director at The Wastepack Group

In 1989, some fairly clever people designed the first proposals to introduce a three-tiered waste-management strategy that would be simple to follow, easy to implement and, most importantly, pave the way for a system that would drive – and build – a better environment for us all to live in. And so the waste hierarchy was born.

50 The mantra of ‘reduce, reuse, recycle’ was unanimously adopted, and it’s easy to see why, because it makes sense. Reduce your usage, then reuse as much as you can, and recycle what’s left.

It was an instant success and, save for a few wranglings over what should take precedence – and the introduction of a further two tiers in 2008 (recovery and disposal) – it has been used to underpin most environmental waste strategies ever since.

In 2017, the war against single-use packaging, and the global campaign to rid our planet of as many harmful products as possible, gained momentum. Never has there been such a need for the waste hierarchy to be acknowledged and implemented. Instead of pushing it to the top of the agenda, however, we seem to have introduced an extra tier – one that appears to be hiding behind the desire for environmental good intention, and that could have far-reaching and unintended consequences. I call this new tier ‘replace’.

There appears to be a growing trend for companies to replace one type of packaging material with another, on the basis that the new material will be better for the environment. As history quite often proves, however, things are rarely that simple.

Bottled natural spring water is a great example of a single-use product that should easily be applied to the waste hierarchy: reduce consumption by using tap water where possible; reuse containers; and, finally, recycle plastic bottles to ensure they are disposed of correctly, adding to the



existing strong end market for this material.

However, some companies are marketing spring water supplied in aluminium cans as the solution, with others touting a return to glass bottles as an environmentally beneficial alternative.

While it’s true that an aluminium can is indefinitely recyclable, the carbon footprint and negative environmental impact through its entire life-cycle is massive – far higher than a plastic bottle. It’s a similar story for glass bottles, not to mention the potential health and safety implications of broken glass.

Another good example of blatant greenwashing is the humble plastic straw. Fuelled by the announcement that the government intends to ban the use of plastic straws, a well-known fast food outlet switched its straws to strong paper ones. Initially billed as a triumph of the commercial sector delivering positive environmental outcomes, it soon

became apparent that not only do the paper straws not work very well, but none of them can be recycled.

I suspect there will be more headlines like this as we discover that simply replacing one material with another is not necessarily the correct approach.

So, what can we take from this? Hopefully, the government’s resources and waste strategy will address many of these issues. Making sure the

packaging we use can be recycled, and that viable end markets for those materials exist, will be a good starting point.

Educating consumers so they put the correct material in the correct bin, and giving them an adequate, consistent national collection infrastructure that maximises the extraction of these materials, is vital.

Let us not simply replace one problem with another. If we all apply the simple waste hierarchy that those clever people developed all those years ago, we will, hopefully, be on track to deliver a better environmental outcome for everyone.

Replacing one material with another is not necessarily the correct approach

PAT JENNINGS

FIRST RESPONSE

CIWM's head of policy and communications unpicks the government responses to four key consultations

Following what turned out to be Michael Gove's valedictory speech as Secretary of State for the Environment, at Kew Gardens in July, and the day before Boris Johnson became Prime Minister, the government published its responses to the four consultations that had dominated the debate across the sector for the first few months of the year.

While there is still a lot of detail to be fleshed out around the various proposals, with a further round of consultations expected in early 2020, the government responses set out a commitment to moving ahead with the proposals.

This public commitment is useful at a time of heightened Brexit uncertainty and, it is hoped, will ensure the many necessary powers to deliver the proposals will be set out in the forthcoming Environment Bill, now currently slated for some time in autumn.

Plastics tax

Turning first to the plastics tax proposals from HM Treasury, the official response indicates that it is aware there is more work to be done in a number of areas, including the recycled content threshold.

While a single threshold of 30 per cent is recognised as being easier to administer and enforce, there was a strong signal from respondents – including CIWM – that a system based on multiple thresholds could lead to better environmental outcomes given the diversity of polymer types and packaging applications in question.

It is also positive to see a consensus from respondents around ensuring alignment with a reformed Packaging Producer Responsibility framework and other initiatives, including the UK Plastics Pact, and on the potential risks of not taxing imported filled packaging, which could disadvantage UK industry.

The Treasury also acknowledges more work is needed on the



approach to composite packaging and bio-based, biodegradable and compostable plastics – a need that is equally relevant to the consistency and Extended Producer Responsibility (EPR) proposals. Defra's recent call for evidence on developing standards for biodegradable, compostable and bio-based plastics is a first step.

The next steps on the tax will be set out in the 2019 Budget, and a technical consultation on the design of the tax will follow, with a consultation on the draft legislation some time in 2020.

Collection consistency

In the collection consistency response, a specific upfront reference to the government's manifesto commitment to support 'frequent and comprehensive' collection hints that interdepartmental

tensions around 'smelly waste', residual waste collection frequency and local authority funding continue to play themselves out.

Again, there is an explicit statement about additional resources being made available to cover any new net costs, both transitional and operational.

Aside from these issues, Defra's response notes there is broad support for a core set of six dry-recyclable streams – including pots, tubs and trays – to be collected from householders, with further consideration to

be given to the inclusion of food and drink cartons, plastic film and bags.

The need for more work on how this would work alongside a Deposit Return Scheme (DRS) is also acknowledged.

Mandatory separate food waste collection gets the green light, although collecting food and garden waste separately for subsequent mixing where in-vessel composting contracts are in place needs further thought, as does free garden waste collection.

Proposals for statutory guidance on service standards and improved communications were popular with respondents, and there is broad

Legislation to ensure businesses separate recyclables and food waste for collection is likely to move ahead

support for non-binding performance indicators and alternatives to weight-based metrics.

Legislation to ensure businesses separate recyclables and food waste for collection is also now likely to move ahead.

More detailed proposals are scheduled to be issued for consultation early next year.

Deposit Return Scheme

Despite concern from a range of stakeholders about the cost and impact of a DRS on kerbside collection, and the interplay between a DRS and the other consultations, the government response confirms the proposals will be taken forward.

The news is not surprising given Scotland's confirmation that it will roll out a scheme by 2021, public commitments made by Theresa May and Michael Gove on an English DRS, and the fact that the consultation attracted more than 200,000 responses.

The exact shape of the scheme, however, is subject to further detailed work to fill many knowledge gaps identified by respondents, including CIWM. This work will include the exact scope and model of a DRS, the value of reductions in litter, consumer views on a DRS, and assessment of the impact of a DRS on secondary material markets.

This extra evidence and modelling will inform a second consultation in early 2020, and the government response acknowledges the need for the introduction of DRS to function coherently across the UK.

Extended Producer Responsibility

On reform of the UK packaging producer responsibility system, the government reports strong support for change and for the overarching principles and outcomes set out in Section 1.

However, respondents clearly had concerns and questions about the focus on the end-of-life, rather than full-life costs, and impacts, reuse and prevention. Addressing this, Defra agrees to give more thought to encouraging reusable and refillable packaging, and notes that other measures in the resources and waste strategy will seek to address wider environmental costs and upstream decision-making.

One of these is the commitment in the strategy to adopt similar mechanisms to the EU Ecodesign system to set minimum Ecodesign standards. This may also answer the concerns of some respondents who felt the proposed definition of 'full net cost recovery' fails to take into account the full range of environmental externalities.

At the other end of the product life-cycle, respondents felt the definition potentially takes the 'polluter pays' principle too far, arguing that making producers pay the clean-up costs for littered and fly-tipped packaging waste means they could be unfairly picking up the bill for irresponsible and criminal behaviour by business and the public.

With regard to the scope of packaging obligated under the system, there is support for including household-based packaging – such as foil and film – although CIWM highlighted the need to assess any potential impact on household food waste arisings, given the role these products play in keeping food edible for longer in the home.

An integrated approach to disposable cups under the packaging producer responsibility system and DRS was favoured by a number of respondents, coupled with strong support for businesses selling takeaway food and drinks to be obligated.

Looking at financial incentives within the new system, respondents were more in favour of modulated fees than a deposit and fee system to incentivise better design upstream. At the collection end, there was strong support for producer payments to local authorities to be based on meeting minimum collection standards and a common set of packaging materials. Again, careful alignment of packaging EPR and any DRS scheme that

is put in place will be critical.

There was strong support for proposals to tighten up compliance monitoring and enforcement to ensure the environmentally responsible management of packaging waste here in the UK and for materials destined for export. However, CIWM and many others emphasised in their responses that the costs of enforcement must adequately reflect the regulatory effort involved, particularly given the significant year-on-year budget cuts that have already compromised levels of enforcement activity by UK regulators. It is interesting to note that, around the same time as the government response to the consultation was published, the Environment Agency announced it is restructuring its approach in relation to waste shipments and producer responsibility by creating a single national team, strengthening its process for assessing applications for accreditation of packaging exporters, and exploring new regulatory approaches, including the risk profiling of overseas recycling sites used by English packaging exporters.

Perhaps predictably in terms of the governance model for the packaging EPR system, Model 1 (closest to business-as-usual market-led approach) and Model 2 (single independent management scheme) were most favoured, and these will now be explored in more detail, with Defra also confirming it will give consideration to the 'hybrid' approaches that were put forward.

With final proposals due for consultation in 2020, the government response also confirms there will be further work on the Impact Assessment and the alignment of the full range of policy measures being put forward in the four consultations.

So, more consultations to look forward to in 2020 – unless Brexit, and particularly a no-deal scenario, changes the landscape so fundamentally that these ambitious proposals are delayed or shelved completely. Only time will tell.

Respondents were more in favour of modulated fees than a deposit and fee system to incentivise better design upstream

Road to net zero

The government's net-zero emissions by 2050 target will ensure a changing climate for business and society, says Laura Mackett, senior associate at Dentons

'We must now increase our ambition to tackle climate change. The science demands it; the evidence is before you; we must start at once; there is no time to lose.' This was the rousing call to action from Lord Deben, chairman of the Committee on Climate Change (CCC), in its May 2019 report *Net Zero – the UK's contribution to stopping global warming*.

The report was a response to a government request to reassess the UK's long-term targets and resulted in a recommendation for new greenhouse gas (GHG) emissions targets to be set to:

- Net zero by 2050 for the UK
- Net zero by 2045 for Scotland
- A 95 per cent reduction against the 1990 baseline by 2050 for Wales.

The UK-wide target was promptly made into law – the previous 80 per cent reduction by 2050 target in the Climate Change Act 2008 was replaced by a new 100 per cent reduction target from 27 July 2019. A bill to set Scotland's 2045 net-zero target and interim targets for 2020 (56 per cent), 2030 (70 per cent) and 2040 (90 per cent) is in motion. If passed, it will give Scotland the world's most stringent statutory climate change targets.

Achieving these targets will require a sharp ramping-up in policy and law-making, as well as major shifts in how we conduct our businesses and how we live our daily lives.

We are not expecting to be an emission-free society by 2050. Most sectors will need to reduce emissions close to zero without offsetting, with residual emissions balanced by GHG removals – for example, via afforestation and carbon capture and storage (CCS).

Changes will be required in energy and heat systems, electrification, the hydrogen economy, industrial emissions, waste and resource efficiency, CCS, road transport, aviation, shipping, agriculture, land use, food systems, consumer choices – and the list goes on.

Industry and individuals are likely to bear some of the estimated annual one to two per cent of GDP (£20bn-40bn) cost of achieving net zero by 2050.

The CCC's scenario planning looks at waste reduction, increased recycling rates and a landfill ban for biodegradable waste in the 2020s, then limiting emissions from waste water and combustion of non-bio wastes in the 2030s-40s.

HGVs must switch to low-carbon electricity or hydrogen fuel sources from the late 2020s, with supporting infrastructure put in place. Types and volumes of waste being generated will change with societal change – alterations to product design and materials demand, dietary changes, and expanded sharing, reuse and repair economies.

Changes to existing waste facility permits will probably be required and reforms may be needed across entire permitting frameworks. Robust regulatory enforcement schemes will have to implement new standards and phase-outs, and litigation may result from uncertainties. Increased policy and law-making may give NGOs greater opportunity to hold government and business to account via the courts.

Industrial lobbies will have increased opportunities to engage with – and shape – policy and legislative change. There may be the opportunity to take advantage of incentive schemes, capital subsidies, tax breaks, sectoral arrangements, long-term contracts and other mechanisms. Border-tariff adjustments could reflect the carbon content of imports and we are likely to see increased carbon disclosure requirements.

Product and building standards will help drive the demand for low-carbon goods.

Delivering net zero will require strong and well-integrated policy frameworks at UK and devolved levels, ensuring changes are clear, stable and investor-friendly. This is particularly important for policy areas that are partly or fully devolved, such as waste.

The next 30 years will bring risk as well as opportunities, domestically and in

wider global transitions to low-carbon economies.

Businesses will want to keep a close eye on – and, in some cases, influence or get ahead of – the changing landscape of law, policy and the demands of civil society, balancing the benefits against the risks of mis-timed or stranded investments. ●

Industrial lobbies will have increased opportunities to engage with – and shape – policy and legislative change

A packaging revolution?

Talk and good intentions about more sustainable packaging are increasingly being replaced by action and innovation from manufacturers and packaging producers. Is this the start of a packaging revolution – and, if so, what does it mean for the circular economy? **Phil Lattimore** reports

Few of us have not, at some point, been taken aback by the sheer quantity of unnecessary packaging used for a consumer product, or the variety of different materials used to contain it.

But there is something of a sea-change happening. While we've heard manufacturers and retailers talk for a number of years about their desire for more sustainable packaging, there now appears to be an accelerating shift in focus for many businesses, transforming it from a corporate aspiration to a pressing commercial priority.

'Sustainability has been on the agenda with companies for a number of years,' says a spokesperson for the Waste and Resources Action Plan (Wrap), 'but the rate of change is gathering pace, be it moving to a mono-material or designing multi-material formats so they can be separated by the consumer before disposal. In some instances, we are witnessing rapid changes, such as plastic straws being replaced by paper alternatives, as consumer power takes hold.'

Consumer demand is driving this change and businesses are responding. Wrap says: 'There are many examples of businesses making changes to their packaging through The UK Plastics Pact initiative (see bit.ly/CIWMSept19pact). Businesses are also preparing for the government's consultation on Extended Producer Responsibility (EPR) that proposes to place the cost of end of life on producers.'

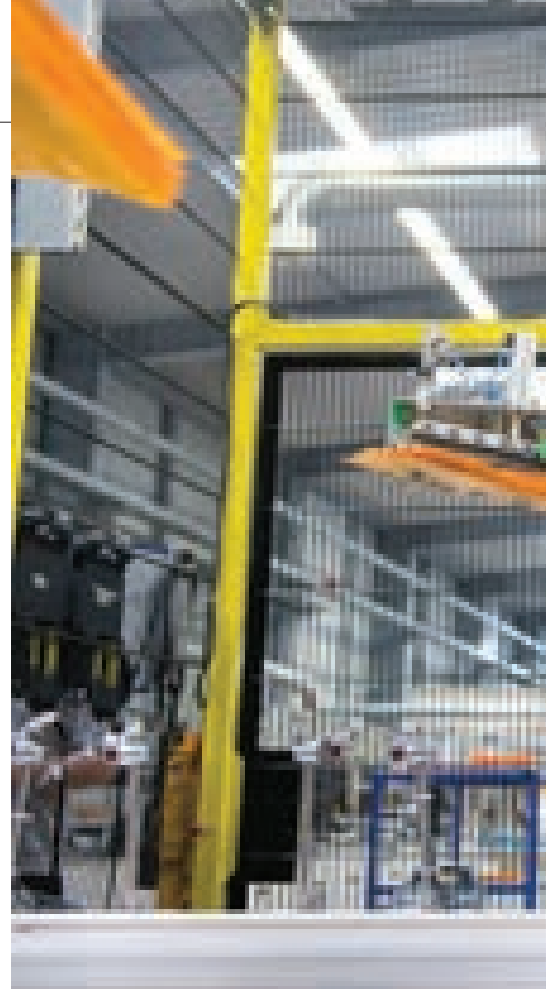
Sam Jones, sustainability strategy and communications manager at DS Smith, agrees that a significant change is under way: 'It is clear that the tone and urgency of the debate around a number of sustainability issues, from

climate change to recyclability, has changed over the past year. Consumer pressure and support from politicians is fuelling the revolution, and companies cannot afford to ignore it.'

This has focused attention on packaging innovation, Jones says: 'More and more, brands are taking sustainability into consideration when they begin the packaging design process. Brands are keen to understand if packaging can be designed more effectively to reduce the amount of material required and, therefore, reduce void space, damage in transit, material and logistical costs, and carbon footprint. By putting sustainability at the heart of the design process, packaging strategists can make decisions that reduce the amount of materials used – clever design choices can make a huge difference.'

Graeme Smith, innovation and sustainability manager for global packaging and paper group Mondi's consumer packaging division, believes there 'is the start of a revolution taking place'.

'People are starting to realise that a new approach to packaging is essential. This includes thinking about everything from the material it's made from, to the way it's designed and produced, and how it's disposed of. We




Automation
at Mondi


Garçon Wines' flat wine bottles are made from 100 per cent post-consumer recycled PET plastic, and are 87 per cent lighter and 40 per cent more spatially efficient than their round counterpart

Commitment initiative (of which Mondi is a signatory).

This commitment is aimed at uniting businesses, governments, and other organisations behind a common vision and targets to eliminate plastic waste and pollution at their source.

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see this as intrinsic to our business as we believe packaging can – and should – be sustainable by design, using paper where possible and plastic when useful.'

Drivers

The shift in attitude to packaging from consumers and product manufacturers has been given added impetus by recent media coverage following the BBC TV *Blue Planet II* series, with its stark illustration of the environmental impact of plastic waste propelling the issue into the media spotlight.

Smith, from Mondi, explains: 'When we talk about drivers, we have seen a welcome momentum driven by the media, consumers and the "Attenborough effect". Sustainable packaging is at the forefront of everybody's mind and this makes it much easier to talk about and take collaborative action on a global basis.'

This has led to more engagement over the past three years, Smith says, particularly among many fast-moving consumer goods (FMCGs) producers and packaging manufacturers, which have committed to circular economy initiatives, such as Wrap's UK Plastics Pact, one of a global network of agreements enabled by the Ellen MacArthur Foundation's New Plastics Economy Global

Signatories include companies representing 20 per cent of all plastic packaging produced globally, as well as governments, NGOs, universities, industry associations and investors. The commitment's core concept is to create a circular economy for plastic in which it never becomes waste.

While environmental concerns are increasingly driving demand for sustainable packaging, issues of cost also play a part.

'Reducing inefficiencies, and material and waste costs, are effective ways of boosting profitability and sustainability at the same time,' says Jones, of DS Smith, a global partner of the Ellen MacArthur Foundation. 'In challenging economic times, companies are wisely considering how packaging design can be more efficient and cost-effective.'

According to the firm's white paper, *The Empty Space Economy*, more than a third (34 per cent) of global retail business leaders admit the packages they ship worldwide are at least double the size of the product inside. This shipping of empty space and unnecessary use of raw material not only wastes money, it has a significant environmental impact, resulting in around 122 million tonnes of unnecessary CO₂ emissions every



Pulac uses a dry-pulp-forming process to turn paper pulp into rigid structures that can replace single-use plastic

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year – approximately the equivalent annual CO₂ emissions of Belgium, Pakistan or Argentina. Eliminating this void space is another driver for change,’ says Jones.

Manufacturers are increasingly addressing this by developing packaging that reduces this wasted space through rationalising conventional formats (such as for crisps or coffee) or coming up with innovative alternatives.

Pen maker Uni-ball (part of Mitsubishi Group), for example, has redesigned its packaging to eliminate plastic (which it replaced with card) for some of its leading lines, and to cut unused space/air when shipping. As well as being plastic-free, the new packs are completely biodegradable and recyclable. The board is made from 100 per cent PEFC-certified material, the inks are vegetable rather than mineral-based, and they use a non-toxic, water-based blister varnish that does not affect composting or cause environmental damage.

The regulatory landscape is also encouraging change, with the impact of EC directives and forthcoming UK government action on plastic packaging waste – particularly in terms of EPR – incentivising manufacturers and retailers to explore alternative

solutions for the packaging of products. Action on plastics was identified as a priority in the EC’s Circular Economy Action Plan, to help European businesses and consumers to use resources in a more sustainable way. European Strategy for Plastics in a Circular Economy, adopted on January 2018, is aimed at transforming the way plastic products are designed, used, produced and recycled.

●●
Packaging designed to be easily recycled, alongside efficient collection and reprocessing infrastructure, is key to a circular business model
●●

Compromise

Whether or not a revolution is under way, however, reinventing or developing new products for packaging isn’t necessarily as simple as seeking non-plastic alternatives.

Smith, from Mondi, says: ‘When you redesign a product you need to make sure you take a holistic viewpoint. It’s not about substituting one material for another just

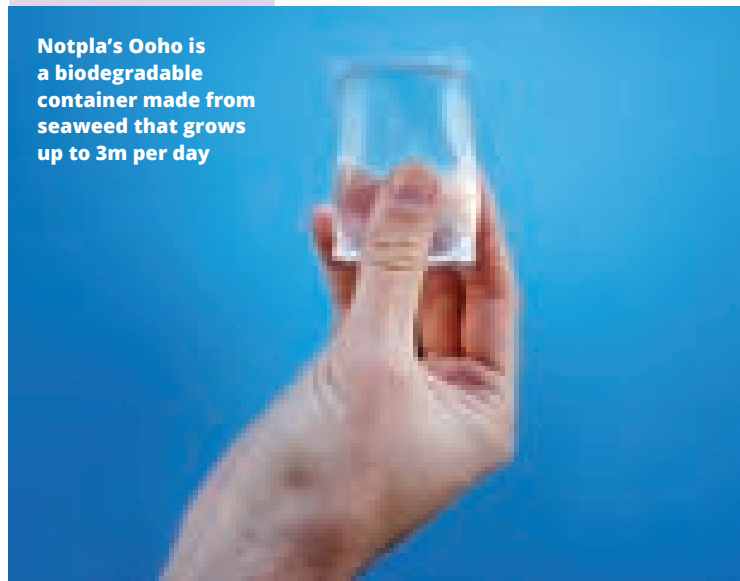
because it seems better – you need to make sure that the whole life-cycle of the product is taken into account. Awareness of unintended consequences of material and product substitution is key. There’s no single route to sustainability. It’s all about finding the best one for your business, your products and the planet.

‘It’s also important to appreciate that in some

Mondi's BarrierPack mono-material plastic pouch is compatible with existing industrial recycling streams



Notpla's Ooho is a biodegradable container made from seaweed that grows up to 3m per day



instances there may be a degree of compromise that is required with the substitution of one product for another. We know that for many applications, high-quality paper packaging is the best choice, as it's made from a renewable resource and is fully recyclable. It is also a lot stronger than people realise.

'However, there are applications where high-tech plastic solutions provide essential functionality that is difficult to replicate by any other packaging material – such as barrier properties for food or product preservation. Lightweight packaging, be it paper or plastic-based, saves on transport costs and emissions, and therefore has a reduced impact on the planet.'

Wrap's spokesperson agrees on the need for a holistic approach: 'When we make decisions about materials, we have to consider all the environmental impacts. It is never straightforward and there are always trade-offs. Considerations include greenhouse gases – not just in production, but through to end of life – and whether: they're made from renewable or fossil fuel-derived sources; recycled material can be incorporated in making the packaging; the material is practically recyclable; it's reusable; and, of course, whether it affects product life.'

They add: 'First and foremost, packaging needs to be fit for purpose and protect the product. Reduction in packaging that increases waste is far more damaging. Packaging that is designed to be easily recycled, alongside efficient collection and reprocessing infrastructure, is key to a circular business model.'

Recyclability

There is still plenty of scope for improvement, however. Research by consumer organisation *Which?* into supermarket recycling has suggested that only 52 per

Bio-materials in packaging

Among the growing trends in packaging is using bio-material solutions, according to Mark Lancelott, sustainability and circular economy expert at PA Consulting. These include:

Alginates and seaweeds – an example of this is PA's work with Skipping Rock Labs and start-up Notpla on Ooho, to create a flexible, 100 per cent

biodegradable, edible drink container made from seaweed.

Pulp, including wood pulp, sugarcane, bagasse and bamboo fibres – PA's work with Swedish start-up Pulac uses a dry-pulp-forming process that turns paper pulp into rigid structures that can replace single-use plastic at a lower cost.

Chitin and bioplastics, such as

polylactic acid (PLA) and polyhydroxyalkanoates (PHAs) – chitin is a natural polymer extracted from the shells of crustaceans and molluscs, which can be transformed into tiny filaments called nanofibrils. These can be used to develop compostable bioplastics that offer a more sustainable alternative to petroleum-derived plastics.

cent of supermarket packaging can be easily recycled.

‘There is a significant challenge in designing product packaging that is recyclable in practice as well as theory,’ says DS Smith’s Jones, citing packaging that often includes plastic, cardboard, film and twist ties or glue, so ‘even the most conscious consumer has to spend time and effort separating materials and checking if the individual components can be recycled in the area’.

Simplifying packaging and replacing difficult-to-recycle materials is an essential component of encouraging consumers to recycle. That could range from innovating with materials, such as corrugated and paper packaging, to making simple tweaks to existing packaging, such as replacing difficult-to-recycle black plastic trays. A number of interesting bio-material innovations are also being developed as an alternative to traditional plastic packaging (see ‘Bio-materials in packaging’ panel), as well as a growing number of compostable packaging solutions being adopted or trialled by supermarkets such as Waitrose, Tesco, Sainsbury’s and Iceland.

Smith, of Mondi, points out that products that are ‘designed with recycling in mind’ make sorting and recycling more effective and efficient. ‘This gives the opportunity for processors to gain the highest possible value from the recycled packaging,’ he says, ‘which in turn makes it more commercially beneficial in terms of promoting a circular economy.’

Holistic approach

To bring about a true circular revolution in packaging waste, redesigning packaging forms and products is only one element of what must be a holistic process. This circular approach should encompass sustainable practices in all stages of the supply chain from the manufacturing to the retailing of products. This extends beyond the development of more sustainable packaging to, for instance, incentivising the use of recycled polymer in packaging, establishing national infrastructure to support a shift to compostable materials, and the mechanisms employed in an EPR scheme.

It must also address the challenges facing consumers in recycling correctly to increase the likelihood that innovations lead to more material being recycled.

‘Clear labelling is essential to ensure packaging is presented correctly for recycling,’ Wrap says. It believes proposals for more consistency in recycling collections within Defra’s resources and waste strategy will ‘enable simpler labelling and clearer consumer communications, thus reducing levels of householder confusion’.

‘If we are going to move towards a more circular



economy, we need to create systems that incentivise the use of recycled material while ensuring the development of infrastructure to improve recycling rates,’ says Jones, of DS Smith. ‘There’s a symbiosis between these elements; we need to stimulate the demand for recycled materials, with this demand in turn supporting an improvement in recycling rates.’

‘This broad approach needs participation from across the packaging value chain, from designers and manufacturers to retailers and recyclers. It’s vital that we come together to help solve this ongoing challenge as no single stakeholder can solve it alone.’ ●

JAMES LEE

DON'T BASH THE PLASTIC

Responsibly produced plastic plays a key role in our planet's preservation, says
Cromwell Polythene's managing director

Plastic products are part and parcel of modern lifestyles, but concerns have mounted about their impact on the environment. Brought into public focus through television programmes such as *Blue Planet II*, action is being taken to reduce plastic waste. This includes measures outlined in the UK government's resources and waste strategy, and in the EU's plastic strategy.

66 We all want to see the recovery, reuse and recycling of every type of packaging, and it is vital we work together to find solutions to protect our environment, combat climate change, and keep products in use for as long as possible. While action needs to be taken on waste, however, it does not mean we need to do battle against plastic.

The problem of plastics in the ocean has grabbed the headlines and certainly needs tackling, but it's easy to act first without considering fully the cause and effect. Marine pollution – not just plastic packaging washing up on the beaches – is very real; however, this is the result of littering and ineffective waste-management infrastructure, not something inherent in the material.

It is also important to note that 85 per cent of the plastic in the ocean comes from a small number of Asian and Pacific rim countries¹ – so not only do we need to use our resources more effectively, we need to help others do so, too.

Responsibly produced plastic can have a high recycled content (up to 100 per cent) and can be reprocessed many times, saving not only virgin material, but associated energy as well. It can offer many sustainable solutions to help mitigate the effects of a changing climate – for example, reducing food waste significantly. It also enables the safe containment of liquids – such as cleaning products – eliminating environmental leaching of chemicals and wastes from bottles, for instance.

The lightweight characteristics of plastic also mean reduced fuel



consumption, resulting in lower greenhouse gases. Using plastic waste sacks and bags is the simplest and most cost-effective way to encourage the consumer to safely – and hygienically – separate and collect materials for reuse and recycling.

The industry has worked hard to ensure every type of plastic can be recycled using technologies that need to be employed responsibly so plastics can be recycled in all cases, where feasible. When this is not possible, the energy can be recovered at an energy from waste (EfW) facility.

We need to ensure the whole picture has been looked at before any new bans, taxes or policy changes are implemented in the name of helping the environment. Unintended consequences – such as the use of heavier, more polluting alternatives – would have a worse effect.

● ●
Industry, government and local authorities need to work together to share solutions and simplify recycling for people across the entire UK
● ●

The plastic debate is important, however, because it is helping to address the way plastics are designed, produced, used, reused, disposed of and reprocessed.

As a member of the British Plastics Federation, I support Wrap's UK Plastics Pact, which has outlined an ambitious set of targets to create a circular economy for plastics. The aim is to eliminate all avoidable plastic packaging waste and make all plastic packaging reusable, recyclable, recycled or compostable by 2025.

Using resources efficiently depends on the engagement of everyone. Industry,

government and local authorities need to work together to share solutions and simplify recycling for people across the entire UK, so we can combat all forms of waste.

Reference

1. Jambeck et al, *Plastic waste inputs from land into the ocean*, Science, 2015, www.iswa.org/fileadmin/user_upload/Calendar_2011_03_AMERICANA/Science-2015-Jambeck-768-71_2_.pdf

Fostering change in Bahrain

A waste management strategy developed for the Kingdom of Bahrain in 2018 will help safeguard the country's long-term future, says **Dan Jacobs**, principal waste management consultant and acting waste and resource management team leader at Mott MacDonald

Bahrain is a small island in the Arabian Gulf with a growing population of more than 1.45 million. After more than a decade of rapid economic development and urbanisation, municipal solid waste (MSW) generation has increased at an average rate of nearly eight per cent per year, with quantities of construction and demolition (C&D) waste nearly doubling over the same period.

Other than a small amount of industrial rubbish, waste – more than two million tonnes in 2018 – is sent to a single non-engineered, semi-controlled landfill in the middle of the desert. With an estimated two years of remaining void space left, and no other land allocated for additional waste infrastructure, the need for change was urgent.

Coupled with a fragmented legislative and regulatory framework, limited recycling services, inconsistent data capture, persistent illegal dumping, low levels of public engagement and a lack of available land, this presented a challenging situation.

A robust national waste management strategy was needed that was supported by key government players, the private sector, and the public. Our mission was to bring stakeholders with us, so the effects of change could be felt – and implemented – by Bahrain's residents and businesses long after our commission finished.

To address perceptions of the term 'waste' – which is seen as a dirty topic that is not normally discussed – the priority was to meet decision-makers, public figureheads and industry at an early stage, to set out our strategic objectives and gain support for our approach.

This was achieved through one-on-one meetings, site visits and wider stakeholder forums. It was evident there was genuine support for change, but a need to manage expectations – zero waste to landfill targets, for example, were not feasible in a country that currently recycles less than one per cent of MSW.

By the time the strategy was adopted, waste management had been pushed to the top of the public agenda, regularly featuring in the media, with government officials keen to put their face to it.

Policy development

The strategy represented a single and unique opportunity to address the waste management situation, not just in the short term, but for decades to come. It was established over a 25-year timeframe to allow for meaningful and sustainable changes to take effect.

This was supported – based on modelling – by recycling and landfill diversion targets for total waste, MSW and C&D waste, with the aim of diverting more than 80 per cent of waste from landfill by 2040 to reflect the phased implementation (and lead-in timescales) of new waste infrastructure.

Plans for the new infrastructure include a sanitary landfill and

Illegal dumping of construction waste is rife in Bahrain



C&D waste facility in the short term; an integrated dirty materials recovery facility/energy from waste and e-waste recycling plants in the medium term; and a food-waste treatment plant and hazardous waste processing facility in the long term.

To ensure the strategy reflected all components of a sustainable waste management system, a series of 180 policies were developed across 13 key themes: legislative framework; education and awareness; regulation and enforcement; institutional arrangements; economic framework; waste classification; prevention and minimisation; collection; storage and transfer; recycling and composting; treatment and recovery; disposal; and environmental impacts.

Policies and actions included:

- Enshrining in legislation specific recycling, recovery and landfill diversion targets proposed in the strategy
- Ensuring proposals for waste management technologies contribute towards the national renewable energy target
- Establishing a multidisciplinary steering group to coordinate and oversee the implementation of strategic actions
- Reforming institutional and organisational arrangements to establish a fully integrated and streamlined structure that encompasses all waste management functions
- Adopting stringent enforcement measures using intervention, sanctions, penalties and criminal proceedings to deter illegal activities
- Introducing progressive increases in charges for the use of publicly owned and operated waste management facilities, so costs associated with their provision, operation and maintenance are fully recovered
- Developing, ratifying, and consulting on a Waste Prevention Plan that includes a range of mechanisms for preventing and minimising MSW generation
- Incorporating the separate collection of packaging wastes in future municipal contracts
- Producing technical guidance that can be circulated to waste producers to clearly define and categorise hazardous and non-hazardous wastes
- Creating a centralised database for waste carriers that are pre-authorised and registered.

Quick wins

To make policy recommendations tangible, an implementation plan was set up to allocate responsibility and assign delivery

Lessons for the UK

In the UK, we often overcomplicate waste infrastructure development and procurement, basing it on complex technology options that are underpinned by overly ambitious local agendas. As we have seen recently, a number of long-term PFI contracts have ended early, either because of performance issues or financial difficulty.

Having the opportunity to develop a long-term plan based on realistic targets and the phased implementation of tried and tested infrastructure will be key for Bahrain. Perhaps in the UK, we can take a step back and try to simplify our technical approach.

timescales. Policy implementation was split into four phases – immediate quick wins (up to six months), short term (seven months to two years), medium term (two to five years), and long term (more than five years).

To maintain momentum and demonstrate progress, immediate quick wins were delivered. An implementation team started working on initiatives, including a kerbside recycling collection service pilot scheme; investigating opportunities for a C&D waste recycling plant; outsourcing

landfill operations to an international waste company to maximise remaining void space; and a trial to assess the feasibility of windrow composting, which was challenging because of the lack of a readily available non-saline waste supply. Moisture is a key factor in the composting process, as it is needed to help support the microbial activity

required to break down garden waste.

The strategy has also laid the foundation for the procurement of a large-scale integrated waste management facility, and there is now a clear commitment by decision-makers to advance the structure of Bahrain's waste management governance. ●

Zero waste to landfill targets are not feasible in a country that currently recycles less than one per cent of MSW



Centre stage

All biodegradable waste should be banned from landfill by 2025 if the UK is to reach net-zero emissions by 2050, the Committee on Climate Change has urged in a recent report. We asked four industry professionals if this is feasible

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Peter Maddox

Director, Wrap UK

Answers to most questions around sustainability and resource efficiency are rarely a straight 'yes' or 'no'. While net-zero emissions by 2050 are certainly feasible, and eliminating biodegradable waste to landfill would be a vital element, this is a complex issue.

The government is 'working towards' eliminating food waste to landfill by 2030, so the Climate Change Committee's call for this target to be met five years earlier has to be seen as ambitious. Our chief concern would be about the deliverability of such a proposal within this timeframe. While it would be possible to legislate quickly, putting in place practical measures – such as the required collection and processing infrastructure – will take much longer.

A report from Eunomia, commissioned by Wrap, into the feasibility of landfill bans in 2012 (updated from one in 2010)

remains hugely valid. Among a host of challenges, it found that seven to 10 years were probably needed if the supply chain was to have enough time to make the necessary changes in sensible, cost-effective ways. Plainly, we don't have that long until 2025.

Before we get to that point, we need to separate and recycle our biodegradable materials so much better. The resources and waste strategy for England already proposes mandatory weekly food waste collections for householders from 2023, and the recent Defra consultation says sufficiently large firms should also have to separate it for collection. Then, with far less food going into our residual waste stream, a ban on landfilling biodegradable materials will be much more practicable.



Jon Harrison

Head of external affairs, Anaerobic Digestion and Bioresources Association (ADBA)

Biodegradable waste is a huge and avoidable source of emissions. Indeed, if food waste were a country, it would be the world's third-biggest emitter of carbon after China and the US. If we are to reach the government's net-zero target by 2050, all carbon-reducing levers will have to be used, including zero biodegradable waste to landfill. So it has to be made feasible.

The UK government's adoption of mandatory separate food waste collections in England is a good start, but this must now be swiftly implemented. There are around 70 local authority waste contracts to be agreed and signed in the next three years.

The government has recognised anaerobic digestion (AD) as

the most environmentally friendly way to treat unavoidable food waste that cannot be redistributed. At ADBA, we have estimated that, in England alone, more than four million tonnes of household food waste redirected to AD could lead to 187MWe-e of new capacity, at a time when clean energy will be a vital part of achieving net zero. We must act now to ensure food waste collections, AD and zero biowaste to landfill are included in these new council and company arrangements, and the valuable resources locked inside biodegradable waste are harnessed to maximum effect. Otherwise, we won't hit net zero.



Pamela Lloyd

Commercial director, Seven Trent Green Power

In short, yes. We believe banning biodegradable waste from landfill is the right thing to do for lots of different reasons, with the environment being top of that list.

Let's look at food waste, for example. Converting food waste into renewable energy is central to what we're trying to achieve at Severn Trent Green Power. This precious resource is already banned from landfill in Wales, Scotland and Northern Ireland. We think England should follow. However, the infrastructure and funding mechanisms need to be put in place if the UK is going to reach these environmental targets. Currently, there are enough AD plants to meet demand across Britain but, if

more aren't brought online by 2023, when the government has pledged to make food waste collection mandatory, we'll quickly become overwhelmed.

It's not clear at the moment what will drive this extra capacity – perhaps it will come out of the heat strategy the government is currently developing. Whichever way it happens, what's clear is that further investment is most certainly needed.



Dr Jane Gilbert

Director, Carbon Clarity

The real question is: 'where should biodegradable waste go instead of landfill?' We know composting and AD are proven technologies to convert biodegradable wastes into useful products – compost and digestate. We also know a lot of UK soils are under threat, with the Environment Agency estimating that more than two million hectares are at risk of erosion in England and Wales, and that intensive agriculture has caused arable soils to lose 40-60 per cent of their organic carbon.

In principle, diverting biodegradable waste from landfill and recycling it to help improve our soils is a win-win. But we also know that putting contaminated recycled organic materials to soil is not desirable. Contaminants such as heavy metals and

organic compounds have been known about for years but, more recently, a growing awareness about the potential impact of microplastics is coming to the fore.

Successful diversion of organics from landfill will depend on improved separate collection of these wastes and treatment at quality-assured processes by everyone along the supply chain. However, safe and environmentally sustainable disposal of the biodegradable waste fraction too contaminated to be recycled into quality products, will still be needed. If not landfill, where?





CIWM membership getting better in more ways than one

As part of a project to simplify and modernise our member grade structure, CIWM's Graduate, Technician and Licentiate membership grades will be brought into our Associate membership grade in September 2019.

This change was agreed after extensive consultation with members and approval from the Privy Council.

From September, new members will be able to choose from five – rather than eight – membership grades: Student, Affiliate, Associate, Chartered and Fellow.

Existing Graduate, Technician and Licentiate members will remain in their current grade until the end of 2019, and will transition into Associate grade when they renew their membership for 2020.

This modernisation will not only bring CIWM's grade structure in line with other professional bodies and membership best practice, but will also make it easier for new members to understand our membership offering. Most importantly, it will make it much more straightforward for them to join. Read more on page 79.

Direct entry to all grades

Our modernised grade structure means all CIWM membership grades, including Chartered and Fellow, will have a direct entry route, so new members can join at the level best suited to their knowledge, skill set and level of experience.

This change will enable those who meet the criteria for one of our professional membership grades to apply at Associate, Chartered or Fellow level without the need to first join CIWM at Affiliate level.

Become a Chartered Resource and Waste Manager

From Autumn 2019, all newly Chartered members of CIWM will be given the title Chartered Resource and Waste Manager (CRWM), rather than Chartered Waste Manager (MCIWM).

This change reflects the importance of managing resources, and better describes the role of members at this level. Current Chartered members will have the option to take on this new title or continue to hold MCIWM.

If you have any questions about your membership or any changes mentioned here, please contact our membership support team on **01604 620426** or email membership@ciwm.co.uk

Free upgrade workshops

If you want to apply for Chartered membership, or would like to know more about it, why not attend one of our free Chartered upgrade workshops taking place in the UK and Ireland this autumn.

These events give you the opportunity to learn about the application process and how to prepare for the professional interview, as well as to connect with other members working towards Chartered status. For dates and locations, visit www.ciwm.co.uk/chartered

Circular announced as 'Best Association Magazine' finalist

CIWM's member magazine, *Circular*, has been shortlisted as a finalist in the Association Excellence Awards 2019, in the Best Association Magazine (circulation up to 10,000) category.

CIWM CEO Sarah Poulter said: 'The announcement of *Circular* as a finalist is such a great achievement for everyone who had a hand in the creation of this dynamic new brand.'

'It truly is testament to the hard work that has gone into making *Circular* the success it is.'

'I would like to thank the team here at CIWM and our publication partner, CPL, for their dedication and passion in bringing *Circular* to life, and for their tireless work to ensure each issue surpasses the last.'

The finalists in the Best Association Magazine (circulation up to 10,000) category are:

- Association of Corporate Treasurers – *The Treasurer*
- Chartered Institute of Environmental Health – *Environmental Health News*
- Chartered Institute of Public Relations – *Influence*
- Chartered Institution of Wastes Management – *Circular*
- Institute of Internal Communication – *Voice*
- National Association of Funeral Directors – *Funeral Director Monthly*
- Pensions Management Institute – *Pensions Aspects*

The winner will be announced at an awards ceremony on Friday 11 October.



New CIWM Affiliated Organisations

We would like to extend a very warm welcome to our new CIWM Affiliated Organisations.

Affiliated Organisations

- Dunton Environmental
- MCM
- Gaskells
- Enerj8
- The Compost Bag Co
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The *Circular* story

As competition for resources intensifies, the economic and social consequences of poor resource management become ever more serious. So the safe and professional management of resources throughout their life-cycle is an increasingly urgent priority. CIWM exists to help industry professionals make better decisions about how these resources are managed.

CIWM's content strategy needed to reflect these changes – to meet members' needs and aspirations in this fast-changing world – and *Circular* was launched.

The brand includes a printed bi-monthly magazine, a daily news website and an online knowledge centre.

It aims to excite and challenge a professional audience, setting the agenda for the resources sector debate while engaging CIWM members.

The name *Circular* reflects where CIWM is heading as a membership organisation; waste and resources now affect many professions, not just those directly involved with waste. Product designers, for example, have to increasingly think about how their materials will be reused at end of life.

Circular is also reflective of CIWM's core ethos – we support the move towards a circular economy.

The magazine is printed on 100 per cent recycled paper to help feed into those vital remanufacturing markets that sustain the business case for recycling.

It also recently made the move to being delivered 'naked', to reduce its footprint and the use of single-use plastic.

If you would like to have your say about the magazine or have any content ideas or suggestions, email liza.salazar@cpl.co.uk

Making the grade

Paul Sloggett, head of member engagement at CIWM, explains the new and improved membership grade structure

With the overall aims of adding value for members and attracting more members, CIWM's new membership grade structure is now live. Designed in line with professional membership organisation best practice, CIWM's new structure offers benefits for new – and existing – members.

What's changed?

- The sometimes confusing structure has been simplified from eight grades to five – Student, Affiliate, Associate, Chartered and Fellow
- There is a direct-entry route for new members at all grade levels, where the applicant meets the criteria
- Entry criteria, competences and application requirements have been updated or simplified
- Application and assessment processes have been made clearer with extra sources of support

- A new title for Chartered Members – Chartered Resource and Waste Manager (CRWM).

The biggest change is in response to feedback that the professional grades of Licentiate, Graduate, Associate and Technician were difficult to understand. In December (renewal time), these four grades will be transitioned into one updated grade – Associate. The term Associate has been retained as it is commonly used across professional membership organisations.

Changes for existing members

By the time *Circular* goes to press, all members will have received an email explaining what the changes mean for their current grade. The good news is you don't have to do anything – those who will transition to a new grade will do so automatically at renewal. But we encourage you to use the changes in our grades as an opportunity to consider upgrading. For example, if you are a Licentiate, Graduate or Technician member, you can:

1. Apply to become a Chartered Member now and, to encourage this, we will halve the Chartered interview fee of £125, if you choose to upgrade in the autumn 2019 period (email membership@ciwm.co.uk)
2. Apply to become a Fellow, if you believe you meet the criteria – ciwm.co.uk/fellow
3. Automatically transition to the new Associate grade from January 2020.

To help you plan the right next step, we've outlined the grades and the changes below.

What does it look like now?

Our members' journey through the grades still usually begins with **Student Membership**, but this is no longer only for those going through university courses. To reflect the changes in how people learn, and the clear commitment that companies and individuals are making to their career development through apprenticeships, student membership is now applicable for anyone who is undertaking a relevant apprenticeship (for example, the Level 2 Waste Resource Operative Apprenticeship).

Affiliate Membership is for anyone who has an interest in waste and resources management. Being an Affiliate with CIWM keeps you informed about current sector issues, provides invaluable insight and networking opportunities and offers you the chance to influence CIWM's work. It serves as a first step for those wanting to progress to professional grades in the future.

Professional grades are where we start to vouch for you as a waste and resource professional. You've been assessed by your professional body, and for chartered



grades by your peers, as a professional in the sector. Professional grades enable the use of designatory letters – for example AssocMCIWM – which allows you to demonstrate to others that you have met the requirements for this level of professional membership.

Associate Member is the first of the professional grades. This is for those who are ready to make the commitment to be a waste and resource professional. The application reflects this with the requirement to supply evidence of your commitment to professional development and to identifying progress against the Framework of Professional Standards, and starting on a development plan for the future, including support from a mentor and/or CIWM as required.

We offer guidance to help with development planning and, when you're ready, will support and guide you on your journey to becoming a Chartered Member. You can access the first of these templates, a new professional development planning template, and read more about this grade at ciwm.co.uk/associate

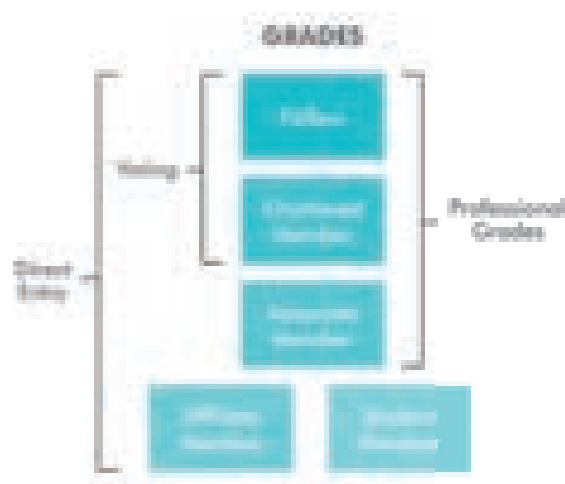
Chartered Members are those that have been assessed by CIWM, and a panel of CIWM members, to have met the seven chartered competences. These reflect the seven areas of the Framework of Professional Standards and are recognised as the core skills required of professionals in the sector.

While the competences remain the same, there are a number of changes and improvements, including the possibility of direct entry at chartered grade, providing the criteria are met. From October, you'll also have access to a chartered upgrade webinar for those unable to attend the upgrade workshops.

Those who achieve chartered grade are Chartered Members with the designatory letters MCIWM. As part of our modernised structure all Chartered Members can now also use the title Chartered Resource and Waste Manager (CRWM). Those who became chartered before autumn 2019 can continue to use the title Chartered Waste Manager (CWM) if they wish.

Being a Chartered Member can open doors, stand out on a CV, and helps to show you are committed to maintaining your professional development. In addition to the benefits of demonstrating professionalism, being a Chartered Member or Fellow also gives you voting rights to help shape your professional body and also further influence the institution in your area as part of your Centre Council.

Chartered Membership also offers opportunities to become a Chartered Environmentalist – see ciwm.co.uk/cenv – and is the entry route to the new MSc



Advanced Industrial Practice (Waste Management), developed with University of Northampton. You can access the guidance notes and read about the application process and competences at ciwm.co.uk/chartered

Finally, CIWM's newly revised constitution has allowed the institution to review the grade of **Fellow** with an updated assessment process and a new route.

As well as meeting all the chartered competences, a Fellow is acknowledged and recognised for 'distinguished professional attainment'. Becoming a Fellow demonstrates you have significantly contributed to the sector and will continue to make an impact. The main changes at this grade are:

- Introduction of a direct route into Fellow membership, requiring at least 11 years' relevant experience and either being a Chartered Member or able to demonstrate you meet the chartered criteria
- Revision of the application criteria and process, including a professional discussion with peers and the requirement for a statement about your achievements throughout your career.

The new direct route recognises there are people in the sector working at a senior level who have not become chartered, perhaps because they didn't originally think they met the entry requirements or because they have been members of another professional body. You can read more about the application and assessment process at ciwm.co.uk/fellow

For our retired members, there have been no changes to these grades. ●

● **Further details of all new grades, guidance and entry criteria can be found at ciwm.co.uk/membership**

Events

National events and conferences

Scottish Resources Conference and Awards

Visionaries and enablers from the private, public and third sectors will converge to hear from speakers and discuss trends, national policies, and local opportunities.

1-2 October, Perth Concert Hall
www.scottish-resources.com

Larac Conference and Awards

Join more than 400 visitors (including 140 authorities) for two days of expert presentations, practical workshops and networking.

2-3 October, Hilton Birmingham Metropole
www.laracconference.co.uk

CIWM training courses

To book, call 01604 823342 or visit www.ciwm.co.uk/training

Contract essentials

This course is vital for anyone involved in managing and procuring contracts, as well as those tendering for public and private sector work. Attendees will gain a detailed understanding of how to procure more efficient contracts while learning how sufficient planning can help move their waste up the hierarchy.

17 October, Northampton

Fire safety on waste sites

Delivered over two non-consecutive days by CIWM trainers, this course offers an opportunity to identify fire prevention options and recognise the information needed for a Fire Prevention Plan. Tutors will use presentations and exercises to help attendees understand how best to protect against fire and ensure plans are properly implemented and understood on site.

5 and 12 November, Northampton

Regional events run throughout the year

Don't miss out on CIWM events in your region

CIWM's 10 regional centres are run by dedicated and highly valued volunteers who, among other things, organise a range of engaging and informative events for members throughout the year. These events range from site visits and topical open meetings to golf days and annual Christmas lunches, and provide valuable opportunities for our members to engage with CIWM and network with fellow sector professionals on a local level. Some of these events are free for members, however, a small fee may be charged to cover costs in some cases. While events run by your local centre may be most convenient, you are welcome to attend events organised by any of our other regional centres should you wish. To find out more and secure your place at an upcoming event, visit www.ciwm.co.uk/centreevents or contact your regional centre directly.



Landfills: Closure, aftercare and economy

This two-day course will help attendees gain an understanding of core landfill areas, including attainment of environmental stabilisation, closure, and an overview of post-closure management principles. Go on to explore possible end-use solutions with the potential for a positive economic return on investment.

6-7 November, Northampton

Introduction to the management of wastes and resources

This comprehensive three-day course will give you an understanding of the broad scope of the resources and waste management sector, as well as hands-on experience to help you do your job. This course attracts delegates from a wide range of organisations, creating the perfect opportunity to pick up ideas and best practice examples from both tutors and practitioners working in a variety of settings.

19-21 November, Northampton

Environmental permitting and exemptions

If you're considering starting a waste activity or are involved in waste applications for new or existing activities, you are legally required to hold the correct environmental permit. This course will increase your chances of getting your application accepted first time.

21 November, Northampton

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LESSONS FROM MY GRANDMOTHER

We must learn from our ancestors about overcoming shortages in supplies to meet societies' growing demands, says Zero Waste Scotland's environmental analyst

From the stone age to the present day, humankind has exhausted the Earth's natural reserves to build our civilisation. Resources are extracted, transformed into products, used until they break, and then discarded.

We live in a world where 90 billion tonnes of materials are consumed every year, and this number is expected to more than double by 2050. The take-make-dispose model has made the sheer scale of natural resource extraction a cause for concern. Addressing this challenge is imperative, as only nine per cent of the resources put into the economy get reused.

Drastic action is needed to 'bend' our economy from its linear trajectory – and technological advancement is key to this. I've come across countless businesses that use big data, the Internet of Things and blockchain to advance a circular economy. In the past, societies had similar challenges in meeting their demands using available resources. To find out how our ancestors confronted these difficulties, I had to go back only two generations.

My grandmother, mother of eight children, is a Palestinian refugee, who was expelled from her land and family home in Jaffa and ended up in a UN refugee camp in Gaza. The influx of refugees to a small strip of land on the Mediterranean coast has led to shortages in suppliers. Palestinian refugees have struggled for decades with this situation – a 'micro' example of what we are facing today: a growing world population with finite resources. These key principles have helped my grandmother survive and thrive.

She made sure to maximise the benefits of everything – especially food – before discarding anything. About-to-be-stale bread was turned into crispy crackers, and soup was made from the pulp of courgettes, after they had been hollowed out to be stuffed with rice. Food deemed unfit for her family was given to poultry in her backyard.



Today, there are numerous examples of businesses that share my grandmother's ethos. Bakery 'waste' is used to make beer, for example, while a start-up company has created a juice range by squeezing 'ugly' fruit. There is also a widespread campaign to re-legalise the use of swill in Europe.

My grandmother has always bought local – even though cheaper options were available – to help her neighbourhood and ensure the community is capable of supporting itself without being dependent on external markets.

Those working in the waste industry know the consequence of dependency on other markets. Countries around the world, especially those that used to recycle 99 per cent of materials abroad, have been struggling since the imposition of import restrictions in China on 24 streams of recyclable materials. Had investment been made in local waste infrastructure, recycling

programmes in those countries wouldn't have been disrupted. A decentralised circular economy system would have enabled them to increase material efficiency, support local businesses and reduce the impact of market disruption resulting from external forces.

My grandmother's decisions haven't always been popular among her family, especially my grandfather, who couldn't understand why she was paying more to buy locally, or giving a broken chair to a neighbour rather than burning it in the stove. My grandmother

considers the long-term impacts of her decisions and will stick to them, as their social benefits outweigh potential savings. By being persuasive, she established her own 'circular' lifestyle.

A circular economy doesn't necessarily mean all industries benefit equally from incorporating these principles into their operations. Governments must assess opportunities, communicate clearly and support businesses that might be affected by disruptive change. Effective leadership will be essential.

● ●
**My grandmother
will stick to her
decisions, as their
social benefits outweigh
potential savings**
● ●