

CAN SCOTLAND DELIVER ON CIRCULAR ECONOMY, SOCIAL UPGRADING, AND INTERNATIONALISATION?

Insights from a Knowledge Exchange Initiative



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Insights from a Knowledge Exchange Initiative

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The aim of this report is to highlight some key insights from the three workshop discussions. These discussions would not have been possible without great participants and speakers. We would therefore like to thank the following speakers and support staff:

Jorren Bosga, City of Amsterdam
Dr Virginia Eschavarri-Bravo, University of Edinburgh
Dr Laurence Estanove, SU11
Prof Patrizia Gazzola, University of Insubria
Dr Michael Groves, Topolytics
Prof Dr Matthias Kalverkamp, Wiesbaden Business School
Prof Zaheer Khan, University of Aberdeen
Dr Feja Lesniewska, University of Surrey
Sarah Lamon, SU11
Matt Lewis, Circular Communities Scotland
Dr Stuart Maguire, University of Sheffield
Noel Mathias, WEvolution
Cheryl McCulloch, Glasgow Chamber of Commerce
Mark Morgan, Stella’s Voice
Dr. Ir. José Potting, EnvirosPotting
Prof Ian Robson, University of Dundee
Paul Sheerin, Scottish Engineering
Dr Anne Velenturf, University of Leeds
Murray Wallace, Aberdeenshire Council
Dr Gary Walpole, Cardiff Metropolitan University
Dr Lynn Wilson, University of Glasgow
Dr Charlie Woods, EDAS and SU11

BACKGROUND

In recent years, Scotland has faced multiple pressures, from addressing the cost-of-living crisis to re-establishing relationships with Europe post-Brexit. These priorities could be delivered jointly alongside creating a circular economy (CE) to achieve NetZero by 2045, while ensuring social upgrading and wellbeing.

In this knowledge exchange series, we focussed on the circular economy perspective. In a collaboration between Heriot-Watt University, the University of Strathclyde, and the University of Aberdeen, we held three workshops across Scotland with over 150 participants. Our aim was to join the dots in the circular economy space, discussing how we can deliver a circular economy that also helps address other important priorities in Scotland. With international guests, we also captured lessons and experiences from other countries. The aim of this report is to highlight some key insights from the three workshop discussions. The broad question underpinning our discussions was:

Can Scotland deliver on circular economy while simultaneously achieving sustainability (particularly social upgrading) and internationalisation?

The importance of building a circular economy in Scotland and globally cannot be understated. While sustainability goals have been established, many companies, regions, and cities do not have a plan to deliver on them. The circular economy provides a framework for practical action to reduce material consumption, waste, and energy use, and contributes to all UN SDGs ([Velenturf and Purnell, 2021](#)). In a circular economy, waste is designed out by rethinking systems. When materials are used, they are kept in circulation through reuse, repair, refurbishment, remanufacture, repurposing, recycling and composting. Although the principles are simple to understand, the world is currently less than 8% circular ([Circle, 2024](#)) and scaling up this circularity will require a fundamental shift in production and consumption patterns globally.

**Second Workshop
P&J Live Aberdeen
December 2023**



**Third Workshop
Dynamic Earth Edinburgh
April 2024**

**First Workshop
NMIS in Glasgow
November 2023**



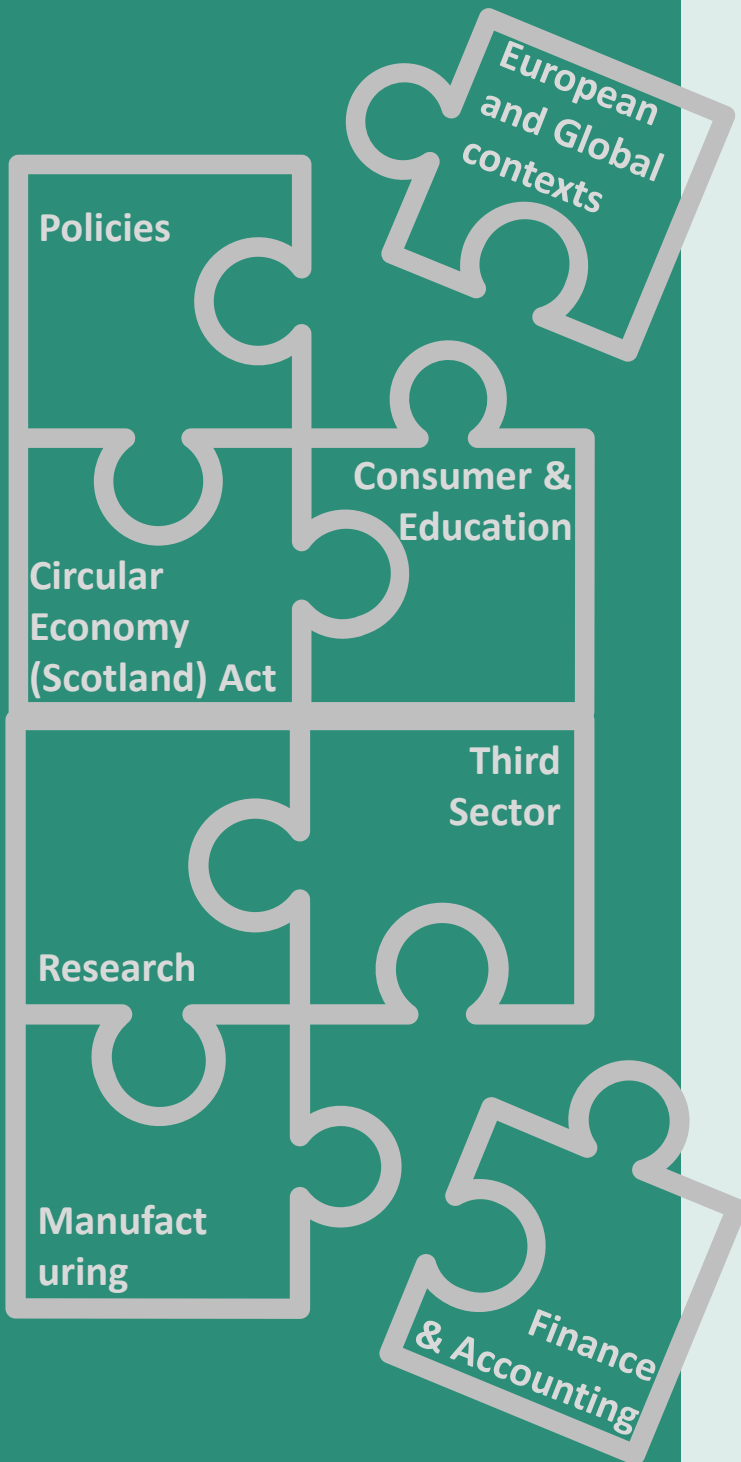
THE CIRCULAR ECONOMY JIGSAW PUZZLE

Creating a circular economy in Scotland is like trying to complete a jigsaw puzzle with a blurred reference picture, and where the pieces continue to change and evolve over time.

At a minimum, the pieces of this jigsaw include manufacturing, retail businesses, the third sector, finance, consumer behaviour, education, research, and policy.

With so much fragmented work in this space, our collaborative knowledge exchange initiative aimed to capture the different facets of transitioning to a circular economy in Scotland. We not only provided opportunities for idea exchange and networking but also created this report to “join the dots”, offering our audience tips and links to various best practice initiatives in the space, in a report freely available to the public.

The circular economy jigsaw does not exist in isolation – it both affects and is affected by national priorities and by the external environment. This is why our programme included international speakers to discuss key questions surrounding circular economy in Scotland while learning from other contexts.





RESEARCH IS UNCOVERING THE POTENTIAL OF CIRCULAR MATERIALS IN ALL SECTORS

LIQUID CHEMICAL PRODUCTS CAN BE MORE CIRCULAR!

Carbon is everywhere – in clothing, furniture, building materials, electronics, and even in everyday liquid products. At the UKRI-funded Circular Chemicals, Heriot-Watt University has uncovered cases where companies are replacing fossil fuel-derived carbon with circular ingredients. For example, a new biochemical method has been used to capture carbon emissions from steel production, converting them into a key ingredient of laundry capsules ([Marques-McEwan et al., 2023](#)). Such symbioses across different sectors are key to reducing industrial waste and emissions but require innovation and collaboration. Incorporating non-fossil carbon into liquid products is only one part of the equation, however, and new technologies are being researched to recover materials at water treatment plants. For solid waste, new chemical recycling methods beyond pyrolysis are being researched, with the first UK plant having been launched in Teeside. This will complement mechanical recycling, allowing for more plastics to be recycled.



REUSE & RECYCLING IN THE ENERGY SECTOR

The oil and gas industry has been built without consideration for end-of-life materials. In the North Sea, companies continue to extract oil, incentivised by a policy of maximum recovery rather than phasing out. When older platforms are decommissioned, often only [10% of their weight](#) is brought to shore, reused, and recycled. The wind sector has an opportunity to create a different story. Wind turbines have a lifespan of around 20 years but are mostly made of metals, concrete and composites, with composites being particularly challenging to recycle. Remanufacturing is starting to emerge, but this is still in the early stages. Recycling capacity is increasing throughout the UK and Europe, but so is demand. Research by the University of Lüneburg, supported by Dr Velenturf from the University of Leeds, shows how Scotland can learn from Denmark and Germany, which export most of their turbines for further reuse and remanufacture ([Kramer et al., 2024](#)).

NEW BATTERY RECYCLING METHODS

Electric vehicles are increasingly popular; however, their batteries and electrical components require six times more minerals than conventional vehicles. As minerals are a limited resource, UK supply chains are challenged to increase reuse and recycling capacity by eightfold by 2040. At the University of Edinburgh, research is underway to find new methods for the bioseparation and recovery of rare minerals that require less energy and non-toxic reagents. How? Through bacteria and bioreactors that can be scaled up at lower cost.



BUSINESS AND SUPPLY CHAIN

The circular economy requires innovation beyond materials, across business models and supply chains; however, the lack of business management skills can hinder many entrepreneurs in this field. In their recent book [Sustainable Development Through Global Circular Economy Practices](#), Dr Stuart Maguire (University of Sheffield) and Prof Ian Robson (University of Dundee) highlight many of the challenges and considerations for circular businesses, including innovation, digitalising supply chain management, and integrating circular economy principles as part of a global environmental strategy.

The book also presents several examples, from the fast fashion industry with H&M and Adidas, to the British glass manufacturing industry.



UNIVERSITIES' ENGAGEMENT

Scotland's rich history of inventions and forward-thinking continues in the 21st century and with circular economy. Scottish Universities continue to integrate sustainability and circular economy with their research and teaching portfolio. At Heriot-Watt University, Prof Medero and partners have invented a [low-carbon brick](#) made of nearly 100% recycled materials. Undergraduate and postgraduate courses and programmes are incorporating sustainability as a key priority. Universities themselves are becoming living labs for experimentation by academics, students, and professional staff.



MANUFACTURING



Our [previous research](#) found that the future of manufacturing in Scotland depends on companies' ability to innovate and seize sustainability opportunities. In the Scottish manufacturing industry, there is interest and engagement with sustainability.

In particular, the 'Net Zero' concept appears to have been well received by most companies. However, while in principle most employees recognise the importance of achieving a circular economy, manufacturers often face barriers to implement it for a myriad of reasons, including:

- 1) Circular economy is often perceived as being less well-defined and less of a priority compared to 'Net Zero';
- 2) There is a perception that 'Net Zero' can be delivered through clear incremental changes (e.g., increased use of renewable energy), whereas circular economy can require more fundamental changes in the business-as-usual;
- 3) Circular economy requires system and infrastructure changes. There is a perception of a lack of supply of circular materials and products. Whilst the benefits of circular products – such as maintaining the supply of raw materials in the future - there are uncertainties, costs, and risks associated with changing before competitors and before widespread waste infrastructure is created and;
- 4) Equipment and processes changes are required, and manufacturers prefer a paced approach, which was demonstrated with the backlash to the Scottish Deposit Return Scheme in 2023.

COMMERCIALISING REFURBISHING AND REMANUFACTURING

Remanufacturing happens when a firm refurbishes a product to its original specifications, potentially replacing some components and sometimes even upgrading them. It requires recovering products, disassembling, identifying the failure, replacing or repairing parts, testing, and redistributing. For the high-skilled Scottish engineering sector, remanufacturing is not new. For example, in the energy sector, [J+S Subsea](#) has developed the Legacy Locker initiative for trading and refurbishing subsea equipment. The University of Strathclyde is home to the Scottish Remanufacturing Institute. However, commercialising refurbished and remanufactured products is not always simple and might require selling speed rather than cheaper prices. Having worked with several remanufacturers globally, Dr. Kalverkamp from the Wiesbaden Business School highlighted how American independent remanufacturers use the cleanliness of their facilities and effective inventory monitoring and storage systems as competitive factors. This contrasts with European firms operating in “messy garages” that do not convey the potential and quality of remanufacturing to customers, thereby reducing its perceived value.



FOR-PROFIT CIRCULAR BUSINESSES: THE GOODWILL, THE SUCCESSES, AND THE STRUGGLES



Scotland is the country of invention and yet the [Circularity Gap](#) report measures its circularity at less than 3%. What this statistic doesn't reveal is that most businesses are actively seeking to implement reduce, reuse and recycle strategies, though they often lack the know-how, resources, or a clear plan. The goodwill and passion for sustainability are evident especially in groups that exchange ideas informally through initiatives such as [People, Planet, Pint](#).

While most businesses have good intentions, a small percentage stand out for designing innovative or disruptive business models with circularity embedded in their DNA. These cases are highlighted in the websites of Circular Glasgow and Zero Waste Scotland, which also provide help and support. For example, [Circular Glasgow](#) is a world-class program that has built a culture of knowledge sharing and support, benefitting large firms and local SMEs in the effort to build a circular city. Other chambers of commerce also work towards a circular economy through their circular economy and/or net zero programmes.



Company Highlight 1 - Ostrero

[Ostrero](#) works to grow the Circular Economy in Scotland through mindset change and education. They've achieved significant impact since 2016 through engagement with policy making, workshops, and school educational projects.

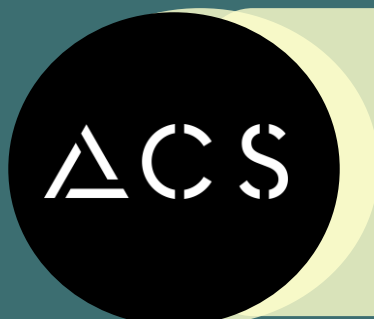
Company Highlight 2 - Happy Porch

Operating since 2015, [Happy Porch](#) is a software development company focused on digital technology that accelerates net zero ambitions via the circular economy, carbon tracking and education.



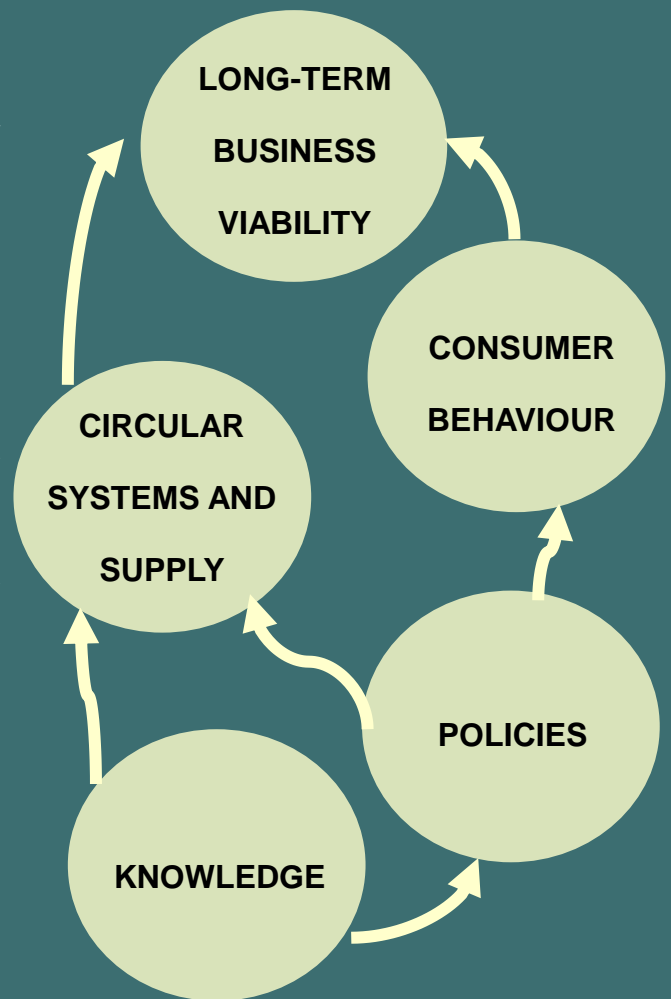
Company Highlight 3 – ACS Clothing

[ACS Clothing](#) is a key player in making the fashion industry circular. They enable clothes rentals, returns, resale and subscriptions business models by managing the reverse logistics, quality control, and storing operations.



BARRIERS TO CIRCULARITY

Despite some successes, many circular businesses face struggles or failure in Scotland and beyond. On the supply side, barriers are mostly not technological. Many technologies are being invented at pace; however, they often don't attract investment to scale up because existing investments are sunk into very efficient global infrastructure. The circular economy is labour intensive, but labour is a more expensive resource than materials, particularly in Scotland. On the consumer side, despite a desire for sustainable products, willingness to pay is limited. Policies, taxation or incentives, and changes in consumer behaviour are required, but these are achieved through slowly evolving processes of education and knowledge sharing, widespread awareness and consensus, and actual changes in consumption behaviour.



CONSUMER ATTITUDES IN ITALY

At the University of Insubria, Prof. Patrizia Gazzola has conducted research to analyse how sustainability and circular economy principles are influencing the perception of the fashion world. A survey with over 1,200 respondents (70% being women and 84% being between 16 and 25 years old) demonstrates that around 80% of the young people would at least donate their used clothes to a charity shop, and 66% purchase in second-hand stores (but mostly online).

Similar results were obtained in a questionnaire with 266 participants which considered attitudes toward using food by-products as raw materials for garments. While over 90% said they would buy textiles created by reusing food waste, over 40% of consumers would not be willing to pay more for such garments, with adults under 25 being the least willing. In summary, similar to the UK, Italians desire circular and sustainable products, but cannot or will not pay more for them.



IS THE CIRCULAR ECONOMY THE SOLUTION FOR SOCIAL UPGRADING?

SOCIAL UPGRADING AND THE CIRCULAR ECONOMY

The idea of a circular economy has gained momentum on the premise that it generates jobs and stimulates economic growth. However, when examining the origins of these assumptions within the literature, one would notice that they are mostly theoretical and have not been significantly substantiated empirically yet. Even more relevant and less substantiated is the question of whether the circular economy leads to social upgrading. Social upgrading is about the quality of work that is created, the rights of workers, quality of employment, pay, and standards. A circular economy is powered by labour, resourcefulness, creativity, and craftsmanship. While the relationship with social upgrading remains not fully understood, charities and SMEs have been the ones honing the skills that will be needed in the near future.



THE CASE OF STELLA'S VOICE

[Stella's Voice](#) is a charity dedicated to preventing child slavery and homelessness. It promotes social upgrading and internationalisation (by helping children in Ukraine and Eastern Europe), as well as advancing the circular economy. With several charity shops across the UK, a significant portion of its income originates from the product donations and reuse.

As charities like Stella's Voice take sustainability into their own hands, they could benefit from greater support. The repair and refurbishment of items provides valuable skill-building opportunities, particularly for young apprentices. This initiative could be further scaled, incentivised, and supported by local councils. Talent attraction can also be challenging, and organisations including EAUC have demonstrated the importance of having clear sustainability/circular economy career guides to attract young people.

Other regulations prevent the circular economy uptake often with blanket measures that could be more nuanced. For instance, charities are not allowed to accept furniture that had fire safety labels removed or if there is minor damage due to Persistent Organic Pollutants (POPs). Though legislation often tries to prevent severe issues, specialised assessments could reduce risks while allowing for the reuse of most items.

THE SCOTTISH THIRD-SECTOR IS BUZZING!



DELIVERING FROM THE GROUND UP

Circular Communities Scotland is funded by Zero Waste Scotland, the Scottish Government, Cycling Scotland, and the Scottish Community Alliance. With 250+ members, they are the largest network of reuse, repair and recycling charities in Scotland across all 32 local authorities. They seek to grow the sector and represent their network to stakeholders including policymakers, having made the case for repair and reuse during the CE (Scotland) Bill scrutiny process.

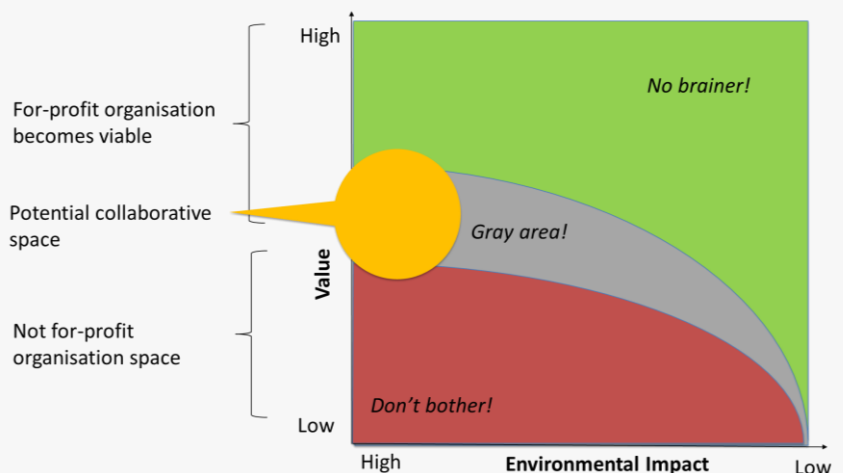
Communities and charities are the ones delivering the circular economy in Scotland from the ground up. Projects within the network include reusing furniture for 8 local authorities, delivering more than 30 bike projects, and creating a network of sharing libraries and repair cafes. The organisation's impact is measured and published yearly on their website.



ROOM FOR COLLABORATION?

Having repair and reuse mostly delivered by the third sector rather than private sector arguably is an indication of current profitability of these activities, and it is logical. For-profit companies generally seek repeated purchases from customers to increase their revenues, and repair, repurpose, and refurbishment risk “cannibalising” these sales, in addition to being labour (cost) intensive. There is evidence, however, that there is a space where charities work in partnership with the for-profit sector.

For example, we previously demonstrated this collaborative space in [a pilot of WEEE waste recycling](#), but other examples could emerge. The key is forming new collaborations that deliver profit as well as value beyond it.



THE POLICY LANDSCAPE IS CHANGING

During the workshops, Dr Lynn Wilson from the University of Glasgow outlined the history of policy development in our country. Scotland has pioneered the development of circular policies and strategies throughout the past decade, progressing through Zero Waste Plan, the [Making Things Last](#) strategy, creating a ministerial post for the circular economy, the [National Planning Framework 4](#) (NPF4), the [Circular Economy And Waste Route Map](#), and lastly, the [Circular Economy \(Scotland\) Act](#) passed in June 2024. However, implementation has not been smooth, through the failure to meet a 70% reuse and recycling target in 2020, to the resistance to the Deposit Return Scheme by the drinks industry in 2023, and breakdown of the SNP and Green Party coalition in 2024.

While other documents have acted as guidance, during the workshops we discussed that the Circular Economy (Scotland) Act is a significant piece of devolved legislation, laying the path for more action in the circular economy space. The bill passed through the Scottish Parliament in June 2024. In a nutshell, the Act:

- Establishes a requirement to prepare, consult, publish, review, and report on a circular economy strategy;
- Establishes a requirement to set, monitor, and report on targets, including those for local authorities;
- Establishes powers to charge for single-use items, issue fixed penalty notices for fly-tipping offenses and for improper disposal of waste;
- Establishes powers to regulate the disposal of unsold consumer goods; and
- Improves waste monitoring.

During the consultation and scrutiny process of the Circular Economy (Scotland) Bill, the public was invited to submit written responses, and many academics and organisations were invited to present evidence to the Net Zero, Energy and Transport cross-party committee. This led to the suggestions of dozens of amendments which improved the bill including:

- The Act now refers to education, thanks to Ostrero and other parties for example in the cross-party circular economy education group and;
- The Act explicitly addresses repair and sharing, as suggested by Circular Communities Scotland and many others.

However, the 'jury is out' on the Act's ability to really influence production and consumption patterns beyond improving waste management.



BEYOND THE CIRCULAR ECONOMY ACT: PLANNING, PROCUREMENT AND ACCOUNTING

Planning & Procurement: Building a circular construction economy

Dr Feja Lesniewska from the University of Surrey discussed how construction is a huge sector and linked to issues such as waste (many times higher than municipal waste), climate change, biodiversity loss, land use change, soil health, and water usage. The Scottish NPF4 reemphasizes waste as a resource, prioritizes the reduction and reuse of materials, and promotes efficient use of secondary materials, but requires more guidance on applying CE principles within the design phase of construction. Sustainable public procurement is a significant lever to drive circularity and the [Public Procurement Strategy for Scotland: 2023 to 2028](#) is now geared towards achieving climate change objectives referring to CE opportunities and incentivizing the use of the [Scottish Government Sustainable Procurement toolkit](#). However, circular public procurement requires competencies that are not yet present in procurement departments today.



Finance & Accounting

Circular financing exists, with several private equity firms investing in circular businesses in Scotland and Europe, but it still represents a small portion of the financial market. While financing, particularly the infrastructure required for a circular economy, remains an issue, accounting represents the other side of the coin. Traditional accounting allows standardised financial information to be captured at both the organisational and aggregated national levels. However, with the circular economy (and arguably sustainability and net zero), measurement is not yet standardised or widespread. This causes three problems: 1) At the managerial level, how does management get information on what the organisation is doing and how they are performing against competitors?, 2) How can things be measured in the organisation in a reliable but simple (less costly) manner?, and 3) How do you report this to shareholders and other stakeholders in a way that not only demonstrates your impact, but that also allows transparency?



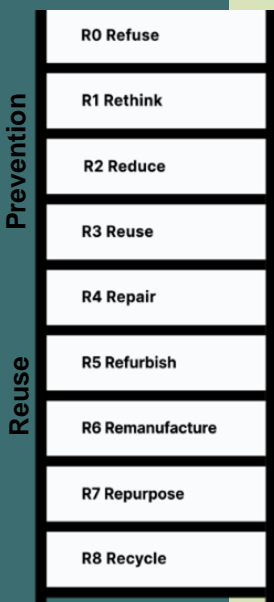


WHAT CAN WE LEARN FROM THE NETHERLANDS?

As global resource use is projected to double from 2019 to 2060, the International Resource Panel has called for absolute decoupling (less material consumption) in high-income countries and relative decoupling (limited growth in material consumption) in low-income countries, so that low-income countries can also benefit from resources while the global average remains within planetary boundaries. The Netherlands leads globally with 25% circularity (compared to less than 8% globally). Dr José Potting highlighted that the [Dutch CE objectives](#) are to reduce the use of abiotic resources (relative to 2014) by 50% before 2030 and by 75% before 2050. This can be achieved with the strategies in the R-ladder (below) focusing on using fewer products for longer, or – when they are no longer reusable – recycling. Multifunctionals and sharing products are examples of smarter ways to use them. Listening to our international guests, it became clear that the Dutch approach is based on a mindset focused on ‘resources’ rather than ‘waste,’ and this thinking is apparent in the EU Green Deal and CE action plan.



The city of Amsterdam has a dedicated team for measuring CE, taking a holistic approach by assessing not only carbon emissions reduction but also controlling and improving a range of environmental and social metrics. With an integrated approach that includes EU-level legislation, local authorities, and widespread consumer behaviour, some lessons that Jorren Bosga and his team have learned from measuring circular economy include:



- **Focussing on mass does not lead to the desired result:** the vast majority of Amsterdam’s material consumption by mass consisted of sand being used to build an artificial island, which can skew analysis and improvements.
- **Impact of material consumption:** Scope 3 emissions of Amsterdam’s material consumption can be up to six times higher than Scopes 1 and 2 emissions.
- **Avoid carbon tunnel vision:** climate change only represents a small proportion of the total externalised costs – therefore, it is necessary to have a broad perspective of externalities.
- **Reporting tools are useful for granular data:** for example, a nuanced consumption-based emissions from infrastructure work was created as a tool that must be used by all city contractors).

(adapted from Potting et al., 2017)

THE CASE OF WALES

Wales leads the UK in recycling statistics and in recent years has progressed quickly towards a more circular economy. The Welsh approach includes:

Policies: including the very important Well-being of Future Generations Act (2015) – the Welsh government version of the SDGs, the Environment Act (2016), the Climate Change Regulations (2018), the Climate Change Regulations (2021), the Net Zero plans and the Beyond Recycling report.

Business, public sector, and the economy: Public service organisations are obliged to report in what they are doing in terms of the 7 well-being goals of the Well-being of Future Generations Act, demonstrating proportionate use of resources. Workplace recycling is a recent legislation (April 2024) in which all workplaces have to separate waste streams or risk fines. The Welsh government have invested heavily in recycling, repair and reuse over the past 5 years. For example, [Repair Cafe Wales](#) and [Benthyg \(Welsh word for borrow and lend\)](#) initiatives have enabled sharing and reuse.

General awareness: Household recycling waste centres are spread across Welsh local authorities, such as the [Swansea reuse corner shop](#). According to the [WRAP Report](#) issued earlier in 2024, the younger generations are more comfortable with buying used or pre-loved items or lending, leasing and sharing. It is the higher cost items that tend to be bought used. The motivations for buying used items are largely the cost savings and the environmental considerations, while the barriers include quality, warranty, cleanliness and safety.



LEARNING FROM THE GLOBAL SOUTH

An individual's carbon footprint is high in the UK and we have a lot to learn from the global South. During the workshops, Noel Mathias from WEvolution invited us to take inspiration from the Indian Jugaad, i.e., non-conventional thinking and frugal innovation through creative fixes and workarounds that helps the most populous country in the world keep their material use low. During the Covid-19 pandemic, while most countries suffered with a lack of physical beds in hospitals, in India cardboard recycling companies stepped up to build dozens of thousands of low-cost, sturdy, and recycled beds to cope with the peak of the crisis.

In parallel, in South America we observe a high proportion of energy being generated from hydroelectric power, and the highest percentages of aluminium recycling globally. While much is associated with poverty with litter picking not providing sustainable living conditions, lessons can be learned on both sides to fix both the attitudes and the economics of materials recovery.

CONCLUSIONS

CAN SCOTLAND DELIVER ON CIRCULAR ECONOMY, SOCIAL UPGRADING, AND INTERNATIONALISATION?

Based on the discussions, we can surmise:

- **Circular Economy:** Scotland is advancing on delivering the circular economy. The Circular Economy (Scotland) Act, passed in 2024, provides the Scottish Parliament with significant powers to implement and measure targets, and to create incentives to promote circularity. However, targets have been missed in the past, and the delivery of the circular economy will depend on the creation and implementation of the upcoming detailed strategy.
- **Internationalisation:** whether the circular economy can improve trade with close international partners such as European countries has not been well researched. At a first glance, the circular economy appears to be the antithesis of globalisation as it incentivises the reuse of resources as locally as possible. In a small country like Scotland, however, reusing all materials will not be possible or wise. The optimisation of reuse, remanufacture and recycling activities at a European level might promote some opportunities for improving trading relationships, for example, in the recycling of wind turbines and decommissioned materials in the North Sea.
- **Social upgrading and cost of living:** Circularity is being delivered every day in Scotland by the third sector. Many circular businesses (for profit and not-for-profit) are offering workers opportunities to develop skills working with materials, refurbishing furniture, remanufacturing equipment, and so on. Simultaneously, they are offering the community access to products at much lower prices and opportunities to get involved in community projects. Therefore, there is anecdotal evidence that the circular economy can and is helping Scotland tackle the cost-of-living crisis and is enabling social upgrading for some workers.
- **Economic growth:** There is some evidence that the circular economy can deliver value at different levels (firm, supply chain, and regional), but this is not straightforward and is not always the case. As the circular economy is labour intensive, in an economy where labour is expensive and heavily taxed (compared to materials), it might be difficult to guarantee economic growth for Scotland. Some firms can increase their competitiveness in a global scale through sustainable and circular strategies, leading to premium prices and/or customer loyalty. However, widespread circularity will require smart thinking, system change, and targeted incentives.

RECOMMENDATIONS

- The **Definition of CE** needs to be intertwined with the NetZero debate as they are two sides of the same coin. If NetZero is a target, CE is one of the ways (in addition to renewable energy) to achieve this target. A rebranding such as 'Circular NetZero' could be an efficient way to engage businesses and other stakeholders.
- Policy makers should be aware that while the Circular Economy (Scotland) Act increases requirements for local authorities and changes small aspects of business or consumer behaviour, **delivering a CE will depend on the strategy and how it is delivered**, including specific action plans for different sectors, education, and holistic measurement frameworks. As the strategy is built, Amsterdam and the Netherlands can be used as inspirations, as well as recycling initiatives in Wales.
- For businesses, CE is all about managing resources in smarter ways. As our production and consumption patterns are part of European and global supply chains, there is **a need to understand further the relationships between CE and internationalisation**, and to embed circularity in procurement practices.
- **Procurement** is one of the key tools to deliver the circular economy, particularly through public procurement. The construction sector should be prioritised as it is responsible for most waste production in the UK. Some opportunities to increase circularity through public procurement are also being explored – for example, in the NHS through the Centre for Sustainable Delivery, and many other initiatives.
- Delivering the CE requires a fundamental shift in consumer behaviour. Much can be learned from the Global South, particularly in **building a culture of craftsmanship, resourcefulness** and frugality. While some behaviours are a result of lower incomes, much of it relates to social norms and creating community-based craftsmanship. Resourcefulness has been a way of life and a means of survival for humans in the past, and it is likely to be a great part of the pursuit for sustainability.
- **Education is key.** Legislation is a push strategy that forces behaviour changes; education is a pull strategy that achieves change through society demanding change.

PROGRAMME IMPACT

The workshops collectively attracted over 150 participants, providing a significant opportunity for knowledge exchange and networking. These events facilitated collaboration between industry, academia, and policymakers, including representatives from Scotland and other European countries. Participants had the chance to share best practices, innovative ideas, and strategies to advance the circular economy. Participants reported making connections with other attendees, including follow-up consultancy projects, meetings, and interviews. Some partnerships that were created have led to a new project funded by Scotland Beyond Net Zero. Additionally, we hope that this report builds a legacy for the programme, continuing to help people “join the dots” in the Scottish circular economy space. Some qualitative comments were shared on social media and via email, including:

“Thanks for initiating. It was an insightful and motivational day in a wonderful venue.”

“Thanks for the invite, a really positive day and great to make new connections around the circular economy.”

“It was a good day - some great speakers and networking and I caught up with old friends! Well done to the organisers!”

“You have already built a great network of experts in this field. It would be great to continue this with monthly/quarterly meetings, both formal and informal, to allow more time for networking and discussions. It would also be good to have them in different cities to include a wide range of people and (...) a dashboard that allows members to post opp



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