Department for the Economy
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Draft

Circular Economy

Strategy for Northern Ireland: Public Consultation Response Report

July 2023

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Executive Summary

Executive Summary

The case for a Circular Economy is already made.

The current "take-make-use-dispose" model – known as the Linear Economy – is unsustainable, costly and unjust. It is heavily reliant on non-renewable virgin resources and fossil fuels, which means it also has serious environmental consequences.

Within the circular model, however**,** use of natural resources is reduced and regenerative ones increase. Waste is minimised, and efforts are made to maintain the value of products and materials for as long as possible.

This will enable us to live responsibly, to build resilience and secure future prosperity for businesses, people and the planet on the path to net zero – and beyond.

The Department for the Economy (the Department/DfE) has been gathering evidence since 2020, through engaging with stakeholders and developing a sound evidence base upon which to shape a draft Circular Economy Strategy for Northern Ireland.

The Draft Circular Economy Strategy was subject to public consultation during a ten-week process which was carried out between Monday 9th January 2023 and Monday 20th March 2023. During this consultation period, individuals and organisations across Northern Ireland had the opportunity to consider and give their views on the draft strategy.

Consultation Findings: Overview

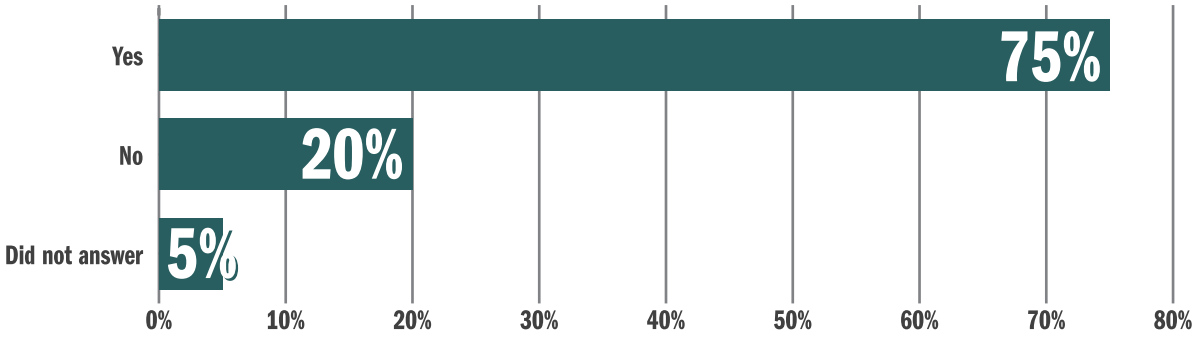
To help create more sustainable production and levels of consumption, the Department, after engaging with businesses, government and industry leaders, developed a vision, a target and 12 proposals for change that are central to the draft Circular Economy Strategy. Consultation on the draft strategy was designed to encourage feedback on each of these elements and to also seek views on future delivery. A summary of responses is outlined on the next page.

Circular Economy Strategy Vision

By 2050 Northern Ireland will have an innovative, inclusive and competitive economy where business, people and planet flourish, with responsible production and consumption at its core.

Overall, the quantitative responses indicated strong support for the strategy's vision, with **75%** of respondents agreeing this was the right vision.

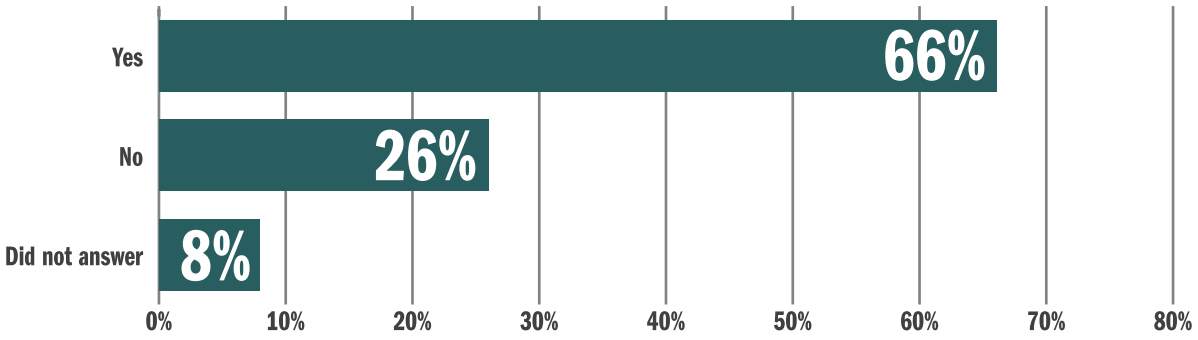
Is this the right vision?



Circular Economy Strategy Target

The quantitative responses showed a **strong support for the target to reduce Northern Ireland's material footprint by half, with 66%** in agreement.

Do you agree with this target to halve our material footprint by 2050?



Behaviour Change

The draft strategy recognises the need to change individual behaviours and mindsets but does not underestimate the difficulties of doing so. Respondents considered regulatory and financial incentives to be the most important efforts government should use to promote behavioural change, followed by the provision of physical infrastructure, information and transparency.

Clusters and Networks (Existing)

Overall, respondents agreed that there was a need to use existing clusters and networks e.g. Circular Economy collaboration networks, community initiatives, place-based clusters, education, skills development, agriculture and livestock, environmental and climate-related networks), in order to facilitate and support industry to research, design, test and deliver transformative solutions for increased circularity. The respondents provided an extensive range of existing clusters and networks, which have been presented within the Annex.

Clusters and Networks (Future-focused)

Respondents also agreed that clusters and networks would be required in the future to maximise resources in key sectors such as agriculture, manufacturing, construction, energy, waste-related, health and social care and materials such as textiles and packaging. Respondents also suggested the need for clusters and networks in other thematic areas including, research and innovation, repair and reuse.

Circularity in Public Procurement

Respondents agreed that public procurement presents an opportunity to influence the behaviours of industry to increase circularity of resources. Broad themes identified to achieve this included product design, innovation and collaboration, procurement policy and standards, increasing circularity in the supply chain, education, training and capacity-building, societal benefits and infrastructure.

Platforms and Hubs

Platforms and hubs which respondents deemed to be most useful to enable people and business to share and reuse products and materials were identified as online platforms and digital solutions (e.g. both existing and new); community initiatives and collaborative network, (e.g. sharing furniture, books, supermarkets sharing food, etc); industry-related platforms (e.g. recycled resources in aerospace manufacturing) and education-focused platforms.

Role of Government in Maximising the Value of Materials Locally

Keeping products and materials in use helps retain their maximum value, while simultaneously lowering demand for material extraction to make new products. Respondents identified a number of tools including product design, repair, industry-specific tools, legislation, fiscal proposals, measurement and awareness-raising.

Funding Priorities

Unlocking benefits at scale will require the government to create incentives that will enable Circular Economy solutions to succeed. From a list of nine possible interventions, reuse and repair and environmentally focused solutions were the top-ranked by respondents, with research and carbon emissions reduction amongst the lowest-ranked. However, in the comments provided, respondents struggled to put the nine possible interventions in any priority order because they are interlinked and all were considered necessary in a systems approach.

Funding Instruments

The majority of respondents (44) preferred the use of grants and subsidies as funding instruments to support development of the Circular Economy in the first 1–3 years, with blended finance being the next preferred option (24), while loans were the least preferred choice (2). Respondents wanted to see funding tailored to the 'problem' it is trying to solve, which would be strictly monitored and assessed.

An Enabling Regulatory Framework

Respondents were in agreement with the need for an enabling regulatory framework and highlighted the need for a comprehensive approach to regulation, integrating various tools and policies to foster sustainable production, consumption, and waste management within the Circular Economy. Respondents have called for government to develop a set of regulations based on the three core Circular Economy principles: design out waste, keep stuff in use and regenerate natural systems.

Development of Skills

Respondents identified key skills that were deemed to be most critical to supporting the Circular Economy. From the analysis, **twelve key skills** emerged, which were categorised under the following four themes:

1. Policy, Legislation and Education
2. Design, Innovation and Technology
3. Construction, Engineering and Manufacturing
4. Systems and Supply Chain Management

Future Delivery of the Circular Economy

There was strong support for the government to play a role in the future delivery of the Circular Economy, with 79% of respondents agreeing that government should be involved. There was an even split in support between those believing government should lead the delivery and those who believed it should be jointly delivered with government alongside other delivery partners. Respondents also provided commentary on the role such a delivery body should play.

Emerging High-Level Themes

The high-level themes emerging from the overall analysis of responses include:

- A desire for **clarity** on the actions government will take.
- The need for **interim targets, action plans** and **greater ambition.**
- Firmer **commitment to collaboration** and the mechanisms to create a collaborative approach.
- **A system-wide approach** is required.
- **Alignment** with other agendas is necessary, namely the Climate Change Act.
- Move away from focusing solely on economic growth to include greater emphasis **on prosperity for all, equality and social justice.**
- **Affordability** and **accessibility** must be at the forefront of future actions**.**
- The need for **evidence to be visible,** underpins the strategy and provides context to targets and future interventions.

Conclusion

Overall, the draft strategy has been well received and the consultation is overwhelmingly supportive of the commitment to transition to a Circular Economy. Respondents were broadly in support of the vision, the target for Northern Ireland to halve its material footprint, and a need for a comprehensive approach to regulation, funding instruments, skills development and the role of government in a dedicated delivery body. The contributions have been rich, informed and in some instances brought a healthy challenge that will be thoroughly considered. The responses have also provided excellent case studies to learn from.

The ideas, learnings and recommendations suggested in the responses will be extremely useful going forwards both in finalising the Circular Economy Strategy – and informing future delivery of the proposals for change.

1.
Introduction

Section 1: Introduction

Background to the Strategy

The need for a Circular Economy Strategy was recognised in the Department for the Economy draft Industrial Strategy. Since 2020 the Department has been gathering evidence, engaging stakeholders and has developed a sound evidence base on which to shape the draft Circular Economy Strategy for Northern Ireland.

Governing this work is a Cross-Departmental Steering Group. The Department also established a Circular Economy Coalition that includes representatives from across industry, local government, academia and the third sector. Both the coalition and steering group were engaged in the evidence-gathering and drafting of the draft strategy.

A Circular Economy will be a key enabler of the Department for the Economy's 10X Economic Vision for a decade of innovation. This will facilitate an innovative, inclusive and sustainable approach to economic growth, and make the most of new opportunities and possibilities presented by the fourth Industrial Revolution.

Preparing the Draft Circular Economy Strategy

To prepare Northern Ireland for the transition to a Circular Economy, a policy review was first undertaken by the Department for the Economy. This review provided an overview of the policy landscape and, perhaps more importantly, confirmed that the Circular Economy will connect and drive growth in a number of initiatives: Investment Strategy, Green Growth Strategy, Environment Strategy, 10X Economic Vision plus a number of other key policy areas, including waste and food.

Following the policy review, a Call for Evidence was issued to the Circular Economy Coalition, seeking views on the current barriers, opportunities and potential targets across the key sectors and material streams.

The Department appointed Circle Economy, who are recognised global experts in the Circular Economy, to undertake a baseline analysis, known as the Circularity Gap Report. This provides a snapshot of Northern Ireland's current levels of circularity plus a material footprint calculation, along with potential scenarios to improve the local economy's relationship with resources and the environment.

Based on this evidence, the Department then prepared the draft Circular Economy Strategy for Northern Ireland, launching a ten-week public consultation from Monday 9th January 2023 until Monday 20th March 2023.

The consultation was designed to encourage feedback on key elements of the draft strategy, including the proposed vision and target, proposals for change and delivery of a Circular Economy. To increase awareness of the consultation, the Department hosted three public events online and a number of other targeted engagement sessions. The events were advertised in the press and social media. A total of 126 people registered for the public sessions.

This document presents the findings of the consultation process, with a synthesis of the responses – both positive and negative – as well as comments and alternative views that were submitted during the consultation for the draft Circular Economy Strategy for Northern Ireland. These findings will, in due course, inform and help shape the final strategy.

Consultation Responses

In total **92** responses were received: 73 from individuals and 19 from organisations, with 85 of these received via the online Citizen Space survey.

The additional 7 were received by email, with a further 4 addenda also received by email in support of responses received via Citizen Space. The format of these additional responses and addenda varied and therefore were analysed separately. *NB: For the purposes of this report, these responses will be referenced as* ***supplementary responses.***

Responses came from a wide range of public and private-sector organisations, special interest groups, industries and individuals, and included very detailed, granular thinking as well as broad, general comments. The issues of climate change and waste cut across many of the responses along with the need to ensure a Just Transition for all.

In collating responses, the Department has sought clarity, transparency and fairness at all times.

Each response to the consultation was treated as a single opinion or comment and weighted accordingly – even though it could represent the views of a company, a trade association, community group, charity or individual. Details of the methodology used is on page 14.

When direct quotes or comments are cited in the report, there is no source given. This is to protect confidentiality, as outlined within the original call for responses.

In preparing this report, common themes have been identified and issues raised in response to each question have been captured, from the perspective of both those who agreed with the proposals and who disagreed.

NB: The views expressed in the report are representative of the responses received and are not necessarily shared by the Department.

Overall, there was a very encouraging response to the consultation, demonstrating the commitment, passion and engagement of stakeholders who wish to see the progression of the Circular Economy in Northern Ireland.

2.
Methodology

Section 2: Methodology

Qualitative and quantitative methods were applied to analyse the responses.

Responses received through Citizen Space were analysed in a number of ways:

- All of the replies and comments were thoroughly reviewed by subject-matter specialists to consider views in the context of the draft strategy, identify commonality, develop themes and record findings.
- Artificial Intelligence (AI) tools were then applied to aid the analysis. These proved very useful for identifying key topics and themes from the responses. Natural Language Processing (NLP), and Large Language Models (LLM) are two of the AI tools used to clarify topics and group them.

By employing AI techniques, we aimed to enhance the efficiency and accuracy of extracting valuable insights from the consultation data as well as adding an element of quantification to otherwise qualitative analysis.

Depending on the style of question and format of responses received, a combination of the most useful methods and tools has been applied throughout the analysis.

Supplementary Responses

Supplementary responses received that did not use the consultation response form were analysed separately using the same methodology as outlined above.

These supplementary responses were segmented and where the comments related to topics covered in the consultation, they have been amalgamated within the main body of this report. For completeness the Annex provides an overview of the other comments made in the supplementary responses.

3.

Analysis of Consultation Responses by Question

Section 3: Analysis of Consultation Responses by Question

This section summarises the quantitative and qualitative responses to the questions posed on Citizen Space, as well as the supplementary responses submitted:

Sectors of Respondents

- A total of 92 responses were received: 73 from individuals and 19 from organisations.
- Only three individuals provided details of their own sector (2 from R&D and 1 from Construction).
- All those who answered on behalf of an organisation selected an answer to the sector question.
- The results are shown in the bar chart below, only for organisations.

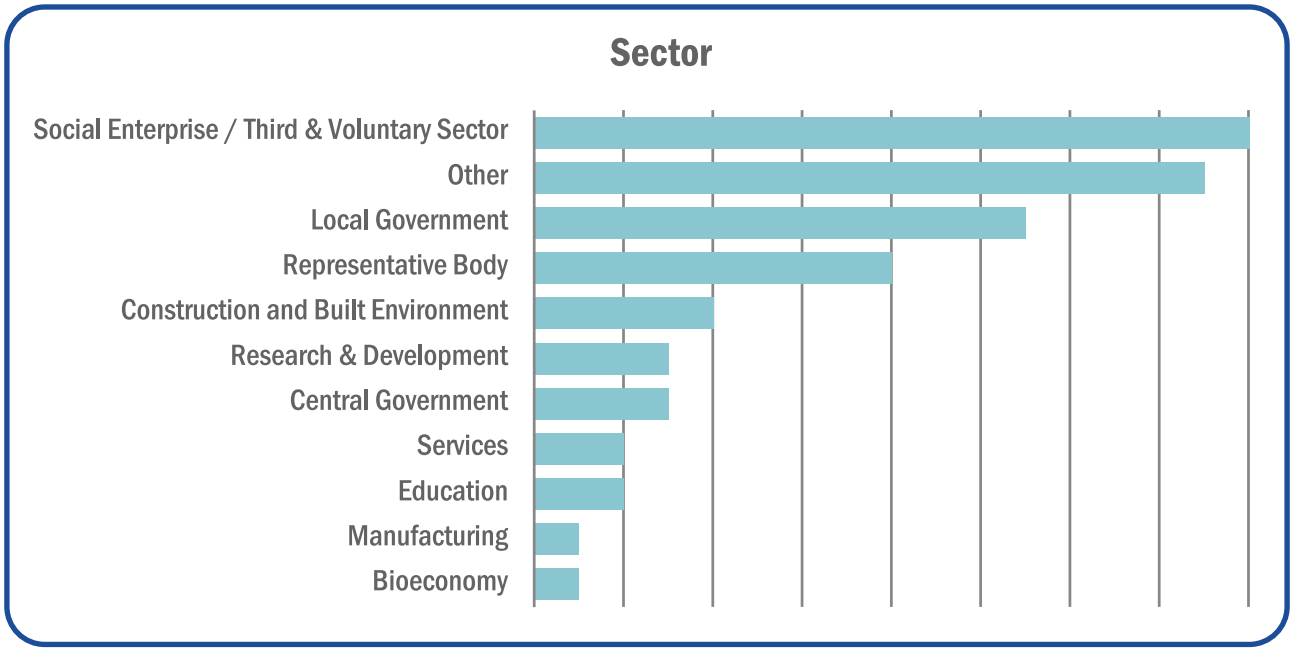


Figure 1: Bar Chart to show Breakdown of Respondents by Sector.

15 respondents who selected 'Other' filled in the optional field provided a description of their sector. This included: Waste Management; Retail; Utility; Environmental Services; Lobby Group; Energy Industry; Social Housing; Telecoms; Charity Body; Professional Body; Networking body; Trade Association; Advisory Panel.

The Circular Economy Vision

The draft Circular Economy Strategy includes the following vision statement:

By 2050 Northern Ireland will have an innovative, inclusive and competitive economy where business, people and planet flourish, with responsible production and consumption at its core.

The consultation survey asked respondents if they agreed with this vision. Of those who responded:

- 75% (64) agreed
- 20% (17) disagreed
- 5% (4) did not answer the question.

Those in support of the vision

A number of these respondents welcomed the draft vision and noted the need for full commitment, funding, legislation, regulation, infrastructure investment and enforcement to ensure success.

When analysing the comments from those who agreed with the vision, the relative weight of comments was calculated, which enabled responses to be quantified and grouped into **eight high-level themes** as set out in the bar chart below:

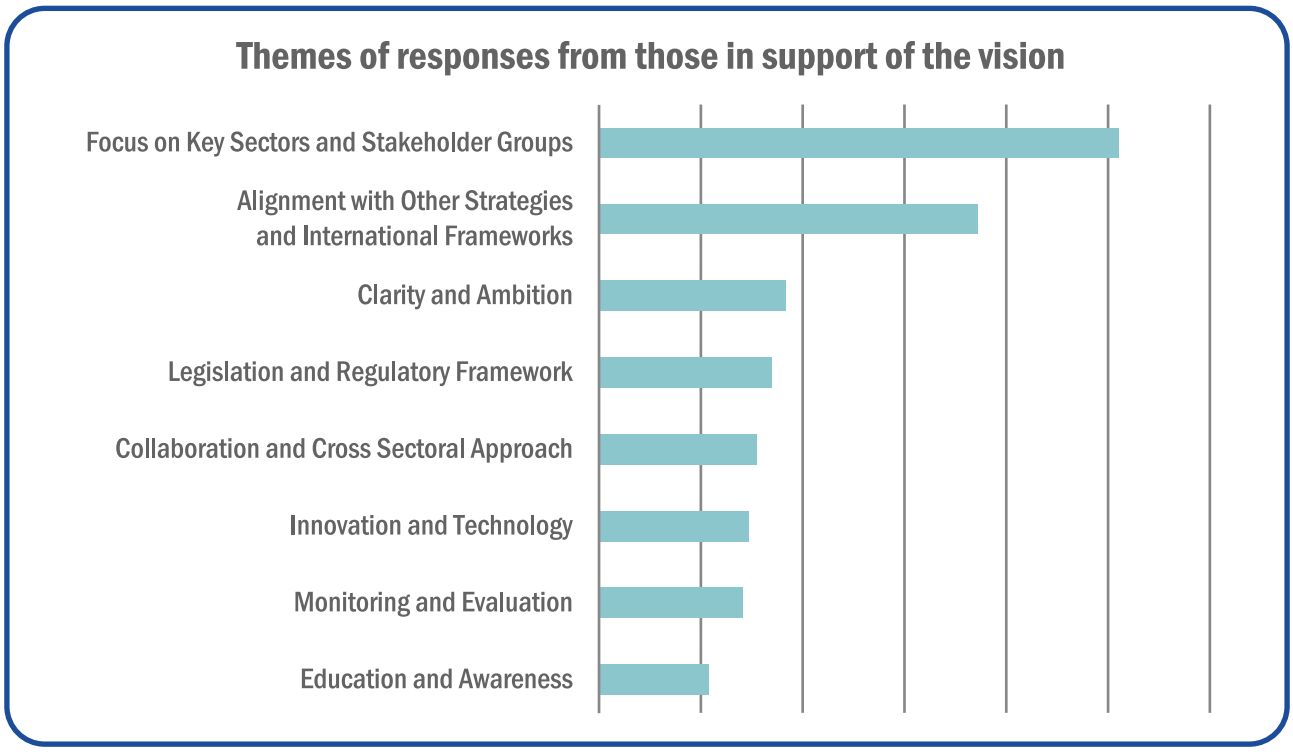


Figure 2: Relative weighting of high-level themes from respondents who supported the strategy Vision.

What does this tell us?

Respondents who agreed with the vision would still like to see:

- An emphasis on **key sectors** – such as agri-food, retail and energy.
- Representation of **specific stakeholder groups**, including children and young people.
- **Alignment** with other strategies and learning from international frameworks, such as the European Green Deal and climate change targets.
- **Clarity** around terminology and concepts**,** plus **ambitious targets**.
- **Legislation and a regulatory framework**, including policies that incentivise sustainable practices and enforce compliance.
- **Collaboration** and **innovation and technology** to support new business models, **monitoring and evaluation** of the effectiveness of the strategy, and **educating** the public on the benefits of the Circular Economy and supporting sustainable practices.

Respondents suggested the following changes to the draft strategy vision:

- Include **collaboration** among business, governments and other stakeholders to create policies and incentives that will encourage the transition, specifically those sectors likely to make the biggest impact.
- **Align with** and make reference to the **Climate Change Act** and **net zero**.
- Include **sustainable** or regenerative **production** and consumption.
- Refer to Northern Ireland's **ecological boundaries** and the need to protect the environment.
- **Revise the timeframe** – from 2050 to 2030.
- Include **'design out waste'** – one of the three principles of a Circular Economy.
- **Include** competitive, thriving, collaborative Circular Economy.
- Recognise the role of the **social economy** and charities and the benefits of involving them.
- Recognise the role of **education** and awareness raising.

Respondents who did not support the vision

These views were quantified and grouped into **four high-level themes** with the bar chart below showing the relative weighting of each theme.

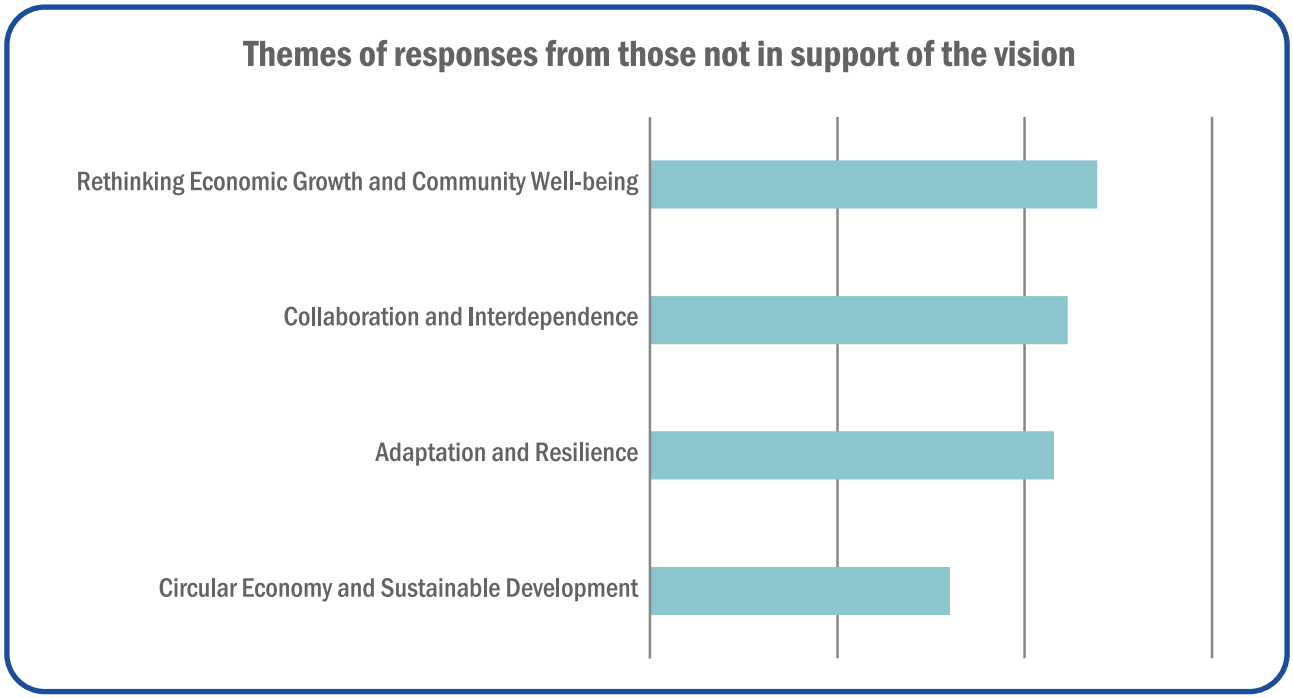


Figure 3: Relative weighting of high-level themes from respondents who did not support the vision.

Respondents who disagreed with the vision suggested:

1. There was **too much focus on business** and competition and there should be a rethink to focus on the environment and community wellbeing.
2. **The 'Business, People and Planet' message reflected a business-as-usual approach**. Those respondents were against economic growth being identified as a goal and considered it at odds with a flourishing planet for people, given the Circular Economy does not support endless growth.
3. Others wanted to see **regeneration of nature** at the core of the vision. The main body of the strategy was considered to move away from competition and profit, prioritising **sustainability**. However, the vision was not seen to reflect this.
4. Those who held that view recommended switching from the pursuit of a competitive economy, for one that is **collaborative**, being cognisant of other strategic agendas, such as climate change. Some wanted to see the environment play a greater role, with climate adaption and creating **resilience as a higher priority** along with focused strategies to support **sustainable development**.

Other comments and issues

There were a number of other comments and issues raised by respondents, which included:

- The timeframe was considered too long and it should be more ambitious.
- Given that reduction and prevention have a high priority in a Circular Economy, a few respondents felt both should be included in the vision and should feature more prominently in the strategy.
- More emphasis on shared prosperity and community wealth-building and the opportunities they create to address **excluded** communities, health inequalities and transport poverty.
- Promote the importance of fostering a **strong, resilient community** with an emphasis on wellbeing and prosperity.
- **Focus on the 'local' dimension** – reducing the distance between production and consumption and thereby support local economic growth and innovation.
- Build greater awareness of the Circular Economy through **education and communication.**
- Ensure there is a proper **peer review** of the vision with a commitment to review and evaluate the vision throughout the timeline of our transition to a Circular Economy.
- Clearly articulate the role of waste management to ensure there is the infrastructure required to process residual waste.
- Creation of a resilient, adaptive and dynamic economy requires **improving and restoring Northern Ireland's environment.**
- Include more explicit reference to **children's rights**, particularly to a healthy environment and education.
- Breastfeeding and the role it plays in supporting sustainable food chains.

QUOTES

"The final vision for a Circular Economy needs to excite and inspire as it reflects a fundamental shift in economic thinking and mindset, recognising that the economy is embedded in society and planet."

"Generally, yes, however there could also be mention of collaboration. Effective collaboration and synergy between government, manufacturers, education bodies, other regions and industry is fundamental to fostering a sustainable and effective Circular Economy. There is a lack of specific detail on how collaboration will be facilitated or incentivised."

The Circular Economy Target

The Circularity Gap Report – which formed part of the evidence base for the draft strategy – concluded that each person here is consuming approximately 16.6 tonnes of resources per year. This figure is known as the material footprint. To live sustainably, the United Nations (UN) recommends a figure of between 6 and 8 tonnes of resources per year. The draft strategy includes a target to reduce Northern Ireland's annual material footprint to 8 tonnes per person by 2050.

Do you agree with this target to halve our material footprint by 2050?

In response:

66% (56) agreed
26% (22) disagreed
8% (7) did not answer the question.

- For those who agreed with the target, 11% believed it currently lacked ambition.
- 27% of all respondents, both those who agreed and disagreed, advocated for a more ambitious target.

Respondents who supported the target

Four high-level themes were identified from the comments made by respondents who agreed with the target.

1. **Interim targets** were considered necessary as 2050 was perceived as too far away, which risked leading to 'delayed action'.
2. **Action plans** were proposed, with short, medium and long-terms goals set within a realistic timeline and subject to regular reviews. These milestones would encourage accountability and urgency in implementation. Many referred to the need for adequate resourcing in terms of investment and funding for actions plans.
3. Respondents emphasised the importance of **behaviour change** and **community engagement** in achieving sustainable development. They called for strategies to influence individual and collective behaviours, partnership models and public opinion surveys.
4. **Collaboration** for delivery was a key theme – both locally with the public, business and private sectors and with international partners who have experience working towards similar objectives.

Other comments

- Some applauded the target and considered the strategy as a good starting point but recognised the urgent need for **infrastructure** to process material to support value retention. This was mentioned as a crucial factor in the context of waste.
- Others referred to the need to **minimise the environmental footprint** and promote **responsible resource management** across industries such as construction, agriculture and transportation through smart technology, energy-efficient systems and investing in green infrastructure.
- Some respondents also advocated for a **robust legislative framework** for the target, similar to the Climate Change Act.
- Some respondents wanted to highlight **possible trade-offs** when implementing the target across sectors – e.g., less plastic packaging resulting in higher food waste and carbon emissions.

Different interpretations of the target

The target was interpreted in a number of ways, but broadly fell into two categories.

- Firstly, those who interpreted the target to apply at an **individual consumer level** – most likely because it has been communicated as a material footprint target *per capita*.
- Others applied the target to the **whole economy**.

The individual-level interpretation

Many respondents who understood the target in this way advocated instead for a system-wide approach. Other responses included a call for targets to be set specifically for government, construction and agriculture, or for those industries which cause the most impact on material use and harm to the environment.

Those concerned with the individual approach made the following points:

- While individual behavioural changes are essential, they are not as impactful in comparison to a sector-wide approach.
- The material footprint is not the same for everyone but the level of reduction required would be the same. This could therefore be a burden on people today and in future generations.
- The transition must be Just – to protect people in and out of employment and to ensure interventions are fair across society.
- The majority of citizens do not understand the material footprint concept and would need the target explained better to gain their support and change the current cultural mindset.

- The approach must be carefully considered to ensure essential and key materials associated with daily life are excluded – for example, nutrition, housing, household goods, mobility and leisure activities.
- Reduction in household footprints will require the adoption of sustainable technologies and practices, e.g. energy-efficient applications and smart home systems.

The whole-economy interpretation

Those who understood the target as the overall mass material footprint made the following points.

- Materials have different impacts on the environment. For example, consuming one tonne of resource with high environmental impact may be more harmful than consuming two tonnes of a less environmentally harmful resource. A few respondents argued the need for material-specific targets, as they did not believe a generalised, intensity-based target would be beneficial.
- The target needs to acknowledge that recycling alone is unlikely to produce all the necessary materials to grow a low-carbon, renewable-energy economy. The metals and minerals needed for much of today's technologies are not currently being kept in use. Circular strategies can bolster supplies of critical raw materials, but alone cannot deliver against the anticipated exponential demand.
- Clarification is required regarding the ongoing need for raw material/input streams. While the strategy considers the need for local and global resources that are deemed crucial, namely, 'critical raw materials' or 'critical minerals', the target takes no account of this.
- The strategy must recognise the challenges and potential impacts of the target on particular sectors. For example, housing is necessary but has a high material footprint and could be unfairly impacted. More broadly, construction must be thoroughly considered. It was also identified as an opportunity sector, with potential to retain the value of resources, through retrofitting homes, bringing unoccupied buildings back into use and placing greater emphasis on heritage-led redevelopment over demolition.

A number of other comments were made that sit outside the two themes identified. These are summarised below.

- The target is ambiguous. What is included in the current material footprint calculation, what would change to reduce it look like and what would those changes mean for people and business?
- How are energy and water usage considered alongside the material footprint target? What investment would be needed, for example in water reuse?
- Use of existing heating infrastructure (e.g. injecting locally produced biomethane) would help reduce the material footprint, instead of investing in new infrastructure for the introduction of new heating technologies.

- The target needs to be underpinned by a series of incentives and penalties.
- Use the household simulation model to devise plans to reduce the material footprint without causing unnecessary environmental damage elsewhere.
- There are potential negative consequences of an individual target on people in poverty, while the same target could benefit those responsible for causing environmental harm.

Respondents who disagreed with the target

- **73%** wanted the target to be more ambitious, with:
    - **32%** believing the 8 tonnes per person should be reduced to 6 tonnes or lower.
    - **23%** advocating bringing forward the target of 2050.
    - **9%** wanting to see ambition raised through **both reducing the target** per person and bringing forward the **timescale** of the target.
- Another **9%** advocated for **more ambition** but didn't stipulate how it should be raised.

The following six themes emerged overall from those who disagreed with the target.

1. **Confusion between resource efficiency and Circular Economy**
Prioritising efficiency in product design and manufacturing without considering end-of-life implications can overlook the need for complete recycling.

2. **Concerns about imposing restrictions on consumption**
Enforcing reduction in consumption could negatively affect lifestyles, industries and the economy. The current economic system is built on commercial growth, which might hinder efforts to reduce consumption.

3. **Scepticism about the feasibility and ambition of targets**
Some felt the deadlines and specific goals are insufficient to meet the target and therefore considered the proposed target as unachievable.

4. **Importance of addressing the entire supply chain and system**
When setting targets, a comprehensive approach is needed, taking in carbon production, supply chains and international collaboration. Focusing only on certain aspects of the problem may lead to unintended consequences, for example increasing digitisation to reduce material demand, yet neglecting the environmental impact of 'energy-hungry' data centres.

5. **Inequitable distribution of resources and access**
The proposed targets do not adequately account for the different impacts and needs of various communities, potentially leading to disparities in resource consumption.

6. **Need for policy and industry support**
The target requires individual effort, but also support from policies, industries and investments in sustainable practices. The focus should be on systemic changes rather than solely on individual actions.

Responses from those who did not support the target

The individual-level interpretation

- The target is unfair on individuals as it is seen to make people less well-off. It fails to take into account income inequality and how income is connected to material consumption. There is also a need to consider unintended consequences, in particular the risk of scarcity or high prices, which could impact the most deprived.
- The emphasis should be on the role of government, as opposed to individuals, to be tougher on industry to ensure products can be kept in use for longer. Focus effort on particularly high value material products, such as white goods.
- A clear action plan is needed to understand how the target would be met and how it would impact on the daily lives of individuals.

The whole-economy interpretation

- Further detail was needed to understand how material footprint was measured, what material was included and the current distribution of resource consumption.
- Refer specifically to primary resources in the target to help people better understand it.
- The draft target was too generic and did not consider the composition of the tonnage of materials and the relative impacts depending on the material type.
- Consider stock shares. In its account of the material footprint, the Circularity Gap Report only considers input and output flows, while stocks should also be accounted for when addressing consumption levels.
- Average of per capita consumption would hide differences in impact and societal inequalities within and between countries. The target could be misleading in terms of the impact on various sectors, hiding injustices in consumption.
- A material target needs to be set for sectors, in alignment with the carbon emissions reduction targets for each sector in the draft Climate Action Plan.
- The deployment of renewable energy, energy storage systems and electrification of transport would increase demand for critical minerals. A Circular Economy for these is essential for reducing price volatility and reliance on primary extraction as well as cutting waste, reducing energy requirements plus the environmental impact of mining and refining of primary materials.

- Include raw water use, drinking water consumption, wastewater returned to sewers and sludge within recovery and recycling targets.
- The strategy's target needs to align with the Republic of Ireland and the UK, taking into account the resources shared between the whole island and the UK.

QUOTES

"At this point the target must be both challenging and seen to be achievable. This one meets those criteria, but it is unlikely to actually be delivered. One of the big problems with targets this far in the future is that people delay action 'until it's easier'. This absolutely cannot happen; indeed up-front action is vital as current practice is still going 'in the wrong direction', so continuing on the current trend is actually making the target harder to meet. Businesses and people (and governments) tend to delay action until the threat is so large that it can no longer be avoided; we are at that stage, which is a serious problem for the world, but is important enough to hopefully stimulate radical action."

"We agree that due to the severity of many current sustainability issues, Northern Ireland (and everyone around the world) needs to set an ambitious goal such as this. Without high ambition now, we will not deliver on the promises made today in the future. We believe though that these ambitions need to be underpinned with a clear action plan, and short-, medium- and long-term goals, against a realistic timeline that includes continual review built into this goal. We think setting the timeline for 2050 will help to work alongside other targets that are due to be achieved, such as UK net zero targets, etc."

Behavioural Change

Individual behaviours and choices about what, where and how someone purchases an item; how long they use it for; whether they can reuse or repair it and when and how they dispose of it; these considerations will ultimately determine if Northern Ireland can successfully transform to a Circular Economy. The draft strategy recognises the need to change mindsets and business models but does not underestimate the difficulties of doing so.

What efforts do you think government should make to promote behavioural change?

Respondents were asked to rank the following four options in order of their most (1) to least preferred (4):

- **Transparency:** Provide greater transparency and clarity on what government is doing to show commitment and create momentum.
- **Regulation and Financial Incentives:** Use regulatory and financial incentives to increase affordability and availability of sustainable options.
- **Information:** Provide information and tools to increase awareness and help change attitudes.
- **Physical Infrastructure:** Provide or adapt physical infrastructure to help make it easier for people to change behaviours, e.g., recycling centres, refill stations in supermarkets and bottle banks.

The combination chart below shows the number of first-choice votes and the number of last-choice votes.

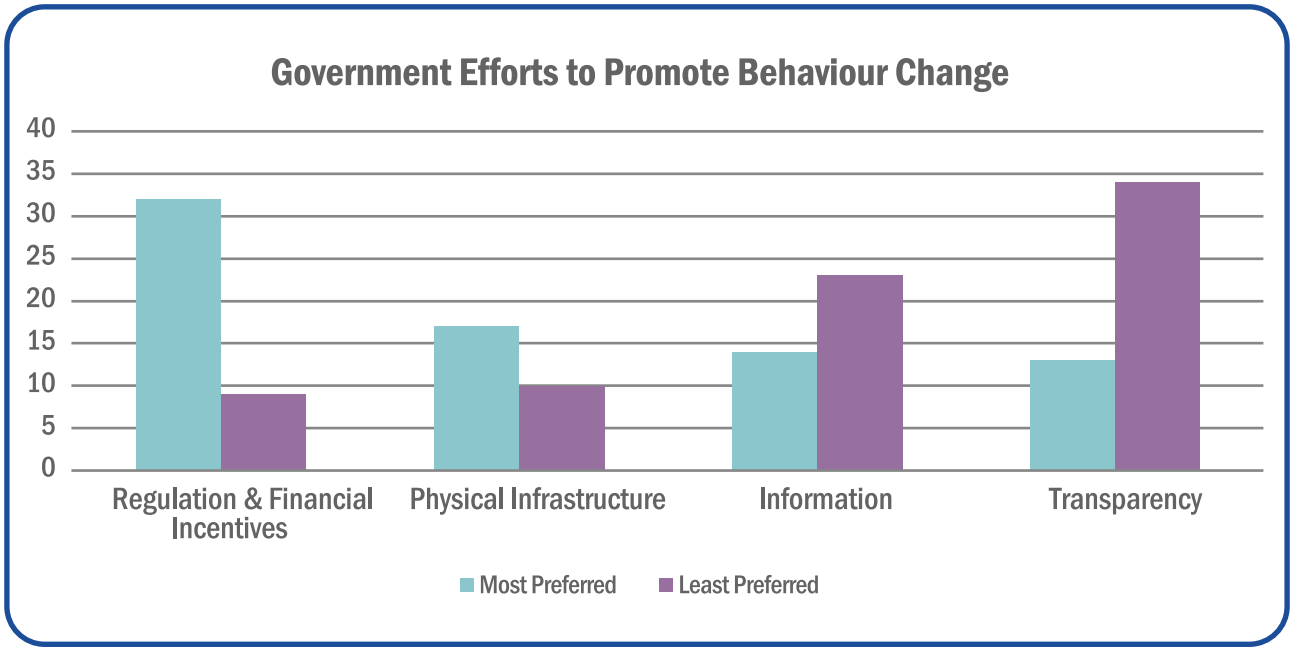


Figure 4: Ranking of options in relation to government efforts to promote behavioural change.

This demonstrates that respondents considered regulation and financial incentives to be the most important to evoke behavioural change, followed by physical infrastructure, information and transparency.

Comments received in the **supplementary responses** relating to efforts government should make to promote behavioural change included the following recommendations:

- A whole-society approach to promote behavioural change towards sustainability. Financial incentives may not always be favourable and over-consumption needs to be addressed.
- Affordability is a critical factor in implementing the Circular Economy. Government should provide targeted financial support to help consumers with purchases and behavioural choices to increase economic circularity.
- Provide information to the public and businesses to help them make more sustainable choices and provide incentives when change is likely to be more challenging.
- Emphasise the importance of reducing food waste as the first step towards increasing circularity and highlight the consequences of not tackling climate change, including a reduction in food and energy security and increased prices.
- Government and businesses should work together to implement Extended Producer Responsibility Schemes (EPR) and Deposit Protection Schemes (DRS) schemes effectively.
- Develop green skills and infrastructure to support textile collection and innovation of fibre recycling to enable transformation and resilience.
- Corporate financial penalties and bans on unused, brand-new electricals and unworn textiles should be implemented to encourage circularity. Make it mandatory for corporations to donate unsold or returned items to charity as an alternative to waste.
- Community transport can potentially contribute to decarbonisation, with Circular Economy funding supporting the use of more community transport electric vehicles.
- Government should provide the necessary infrastructure and information to facilitate action and NGOs should be at the forefront of both sharing information and education to reinforce the need for change. It was suggested that the current cost of living crisis provides an added incentive to transition to a more Circular Economy for businesses, individuals and governments.

Clusters and Networks (Existing)

Many of the barriers to circularity will not be addressed without using clusters and networks to facilitate and support industry to research, design, test and deliver transformative solutions.

What existing clusters and networks could be utilised to deliver transformative solutions for increased circularity?

Responses to this question varied greatly. Some respondents provided a general summary of the type of clusters and networks currently in operation, while others listed specific groups.

The terms 'cluster' and 'network' were also interpreted differently, which led to a mix in the responses. The draft Circular Economy Strategy for Northern Ireland defines the terms as follows:

Clusters *are a geographic collection of interconnected companies producing similar or related goods/services that are innovation-orientated, seeking to benefit from integration across businesses.*

Networks *are an alliance of organisations (public/private or other) seeking to work together to achieve an economic goal, which could be within or outside a cluster.*

What existing networks and clusters did respondents suggest?

Responses were grouped into eight themes. Each includes:

- a broad description of what is meant by the theme
- the relevant nature/purpose of the clusters and networks as outlined by respondents

A full list of the examples cited by respondents have been listed under the relevant categories within the Annex.

1. Circular Economy Collaboration Networks (International and Local)

Responses collated within this first theme outline a range of existing clusters locally, nationally and internationally which:

- **support** policy development, data collection and measurement
- **enable** collaborative working
- **encourage** circular innovation and design to reduce plastic use and the environmental impact of waste.

These clusters and networks seek to align standards and increase synergies to share knowledge and provide greater awareness of best practices and circular solutions. They play a key role in sharing information on Circular Economy funding, financing and green investments. They provide an opportunity to work together in identifying and addressing supply chain challenges, building a Circular Economy infrastructure and upgrading existing systems and processes.

2. Community and Grassroots Initiatives

This theme relates to clusters and networks identified as supportive local groups or initiatives which:

- **promote** Circular Economy principles
- **build** a community of shared skills and resources
- **encourage and influence** behaviour change
- **challenge** existing detrimental attitudes toward waste and consumption
- **encourage** climate action to improve the local environment.

The clusters and networks identified within this theme were considered to foster a bottom-up approach in driving environmental change and promoting Circular Economy adoption to include schools, community and sports clubs and youth groups. The role of these clusters and networks includes cooperation between councils, businesses and civil society organisations, enabling engagement with stakeholders and communities to implement Circular Economy strategies, deliver grants, raise awareness of environmental impacts and encourage volunteer-driven initiatives and events supporting not-for-profit organisations.

3. Place-based Clusters

This theme relates to specific clusters and networks which:

- **collaborate** on Circular Economy approaches and initiatives within a defined area or place
- **drive solutions** shaped by challenges and ambitions set out at regional or national level
- **range** from national public/private partnerships to regional innovation frameworks and funding packages
- **aim to stimulate** collaboration between industry, SMEs, academia, government and the wider community
- **facilitate and oversee** the implementation of key Circular Economy-related projects and services, supporting district councils and replacing traditional infrastructure with greener alternatives.

4. Education, Skills Development & Workplace Environmental Policies

These are existing clusters and networks supporting initiatives that contribute to the Circular Economy and promote sustainable practices. Their role includes:

- **investing** in low-carbon, net zero and non-growth-oriented education, skills development and training programmes
- **providing opportunities** to upskill and reskill for those in vulnerable sectors
- **identifying skills gaps** and creating employment opportunities by working closely with SMEs.

Respondents also highlighted the importance of the workplace in implementing environmental policies and initiatives to deliver transformative solutions, and identified existing clusters, networks and associations that encourage adoption of green practices in both internal and external operations, protecting jobs and supporting a Just Transition for those disproportionately affected by climate change.

5. Industry Transformation, Knowledge Transfer, Research & Development

Responses under this theme include existing networks, forums, organisations and representative bodies which:

- **represent key decision-makers** – professionals, senior business leaders and CEOs, producers, industry and local councils
- **provide a collective voice** to facilitate discussion among key stakeholders and government on relevant environmental and sustainability issues
- **encourage collaboration** between businesses, social enterprises and community groups
- **include academic and research bodies** that provide guidance to business and industry to help move the UK towards a Circular Economy.

Respondents outlined the key roles of these clusters and networks as: encouraging best practices and facilitating the adoption of sustainable methods; learning from successful examples of local and international industries that have transitioned to a more circular model; and establishing robust monitoring and clear reporting protocols for network investments and transformations. They also recognised the role of funding networks and programmes to support businesses in taking an innovative and collaborative approach to green economy projects, reducing risk and leveraging knowledge and resources.

6. Agriculture and Livestock

This theme collates existing organisations and bodies whose roles have been identified as:

- supporting **sustainable agricultural practices** and resource management
- providing **research and development**
- exploring opportunities for **collaboration** in slurry processing and biogas production for renewable energy sources.

These networks provide improved understanding of the close relationships between agriculture, land use and climate change, helping to tackle the complex industry challenges through science and innovation, while supporting the rural economy.

7. Multi-Stakeholder Cooperation

Responses collated within this theme incorporate networks and organisations who:

- **engage** councils, civil departments, trusts and the Executive
- **foster** dialogue and collaboration between political, academic and industry stakeholders to increase circularity.

Respondents identified how these clusters and networks work towards reducing consumption, increasing recycling and promoting low/zero carbon energy solutions, playing an important role in tackling the causes of climate crisis and promoting waste prevention. Their remit varies from promoting charitable causes and advocating for rights within society to supporting Sustainable Development Goals and driving local progress on climate action and sustainable development.

8. Sustainable Development, Environmental and Climate-Related Networks

Responses collated under the final theme concern existing clusters and networks identified as supporting low-carbon initiatives and promoting environmental education and skills development.

Their role includes:

- **addressing challenges and opportunities** in transitioning to a zero-carbon Circular Economy
- **facilitating discussion** and promoting sustainable development across Northern Ireland, the UK and Europe.

Networks identified include summits and forums which seek to bring individuals and organisations together in addressing environmental impacts and promoting sustainable practices including plastic reduction and peatlands restoration. Another key role of these networks is to inform regional, national and international policies and strategies aimed at reducing pollution and supporting green energy solutions.

Other comments and suggestions

Respondents provided the following additional comments.

- One response suggested consolidating and aligning all existing Sectoral Partnerships, Partnership Boards and other networks as one of the first steps of Circular Economy delivery, rather than setting what could be perceived as another bureaucratic layer.
- There was also a request to consolidate and make available a list of relevant networks to facilitate collaboration and engagement.

- One respondent was keen to encourage local authorities to network and identify any opportunities for industrial symbiosis, similar to the Kalunborg partnership in Denmark. A suggested starting point could be existing industrial estates such as Seagoe, Portadown, Skeoge, Springtown, Kennedy Way and Belfast Harbour Estate.
- One response also highlights the use of British and International standards to help organisations achieve their sustainability aims.
- Another respondent more generally noted that local interest clusters are likely to be most successful in developing appropriately targeted actions and should therefore be encouraged and facilitated. They suggest that this has proven very successful in farming and it should be translated across sectors.

Clusters and Networks (Future-focused)

What clusters and networks do you think will be needed in the future to maximise resource use?

It was possible to group responses to this question under the categories of:

- sectors/material flows
- other thematic groups.

Sectors/Material Flow-focused Networks and Clusters

Agriculture

Respondents suggested the need for networks and clusters for this sector to:

- **support** sustainable farming practices
- **develop** innovative approaches to reducing waste
- **increase** resource efficiency including use of by-products
- **collaborate** on land management including the amount of synthetic and chemical fertilisers
- **create** networks to consider soil, waterways health and nutrient management.

Manufacturing

- Networks and clusters suggested for this sector would include designers, manufacturers, material suppliers, waste management providers, contractors and all working within the supply chain.
- This would encourage collaboration on designing products with a longer lifespan, easier repairability and higher recyclability.
- One response called for manufacturing plants to be relocated to areas where energy waste and material by-products can be utilised as inputs into other processes.

Construction

Suggested networks and clusters for this sector would bring together engineers, architects and all those in the sector to promote sustainable building and reuse. This would enable access to more high-quality secondary material and regenerative materials that are cost-competitive. There was also a call to support locally produced resources such as timber to ensure security of supply. One suggested an online network or database of available buildings and public spaces for organisations and communities to repurpose.

Biogas and Biomethane

One response focused on biogas clusters and biomethane network and provided the following recommendations:

- The biogas clusters would be expected to inform delivery of future biogas hubs.
- Manure, food waste, sewage sludge and organic industrial waste were considered suitable for conversion.
- Clusters could be established between distilleries, breweries and creameries to design future solutions biogas productions.
- Other waste streams from industrial processes or human activities could also go through a biogas digester to be converted into energy.
- The biomethane network would be similar to the existing hydrogen network with an aim to advance local production of biomethane.

Other Energy and Waste-Related suggestions

- A couple of respondents also mentioned the need for clusters to support the planning and delivery of anaerobic digestors (AD) on farms. The clusters would be expected to support farms in sharing the cost of digestate upgrading technology through cooperative investment. The respondent suggests the raw digestate being 'dewatered' – i.e., where liquids are separated from solids onsite, and then be transported to a centralised upgrading plant to valorise the material. The costs and profits would be shared between users.
- One identified a need for greater collaboration between councils and recycling companies to increase the level of material collected and increase the efficiency of waste collections.
- It was suggested that a cluster to support the collection of food waste in rural areas could help aggregate the waste for treatment at a centrally located AD. The respondent identified the need for regulatory 'carrots and sticks', with fines or payment for uptake along with communication to help better understand the benefits of sending food waste to AD.
- Another energy-related suggestion included establishing clusters to develop integrated energy systems to reduce energy waste and save money – for example, waste heat from a data centre being used to provide low-carbon district heating systems to other buildings in the local communities.
- There was also a suggestion for place-based clusters to support the planning and delivery of energy from waste infrastructure for both municipal waste and waste from farms.

- One respondent highlighted how increased resource efficiency can impact the compilation of residual waste. As more reusable and recyclable material is taken out of the waste stream, the remaining waste will be increasingly contaminated and consequently become harder to treat. This suggests a need for ongoing treatment facilities to deal with the waste in the most cost-efficient manner.

Health and Social Care

A couple of respondents suggested the need for a network of health and social care providers, paid and unpaid, to share learning and provide training on matters that would increase resource efficiency, including waste management. There was a similar request for those involved in the childcare sector. Such networks would provide opportunities for those who are often excluded from typical stakeholder engagement for major sustainability programmes but whose input is vital to achieving a Circular Economy.

Textiles

A small number of respondents suggested a network to support the circularity of textiles, in particular clothing in terms of repair, refurbishment and recycling.[1] Textiles 2030, with the support of ASOS (based in Belfast) and the recently established textile digitisation innovation cluster (Belfast), has potential to scale up and fast-track circularity of textiles in fashion. One suggestion identified an opportunity for local authorities to act as a connector between retailers to suppliers, creating a large-scale, pre-loved concept store, engaging all retailers within the area in the sale of second-hand clothing. The need for alignment in regulations across the UK was also emphasised.

Packaging

A couple of respondents considered it useful to bring the numerous organisations in this sector together, along with the recycling sector to maximise resource use.

Research and Innovation

- Knowledge Transfer Partnerships between universities and industry were considered necessary. These could be tasked with designing the best next use for end-of-life products.
- Local and international multi-disciplinary centres were mentioned by one respondent. These would help tackle local Circular Economy issues with local solutions and innovations. The centres could also support the interactions between multi-level stakeholders, including citizens and government.
- A ‘circular innovation hub’ was suggested to act as a platform for startups, researchers and established business to collaborate, share knowledge and access funding for innovation circular projects.

1 Further information is available in Wrap -What is Textiles 2023 (external link opens in a new window/tab)

- Another respondent suggested a 'biomimicry network' utilising lessons from the natural world to inform designs that will support circularity. This would provide blueprints which can be adapted across industries and can be scalable.
- Idea workshops were suggested and considered useful for facilitating cross-sector networking.
- Local Policy Innovation Partnership: this is currently at bidding stage but once set up it could be used to build new partnerships as it will be purposed to promote net zero, nature-based solutions and the transition to a green economy.

Repair and Reuse

- Repair and Loan Centres – to offer training, reduce waste and create opportunity for free cycling of unneeded/unwanted items.
- 'Tool libraries' and repair cafes.
- An online 'one stop shop' to help citizens and businesses find suitable reuse products. Circular Communities Scotland was mentioned as an example of good practice.

Other comments & suggestions

- Association of Cities and Regions for Sustainable Resource Management: this is an international network to accelerate the transition to a Circular Economy that facilitates the exchange of experience, sharing technical and policy information.
- Citizen Assemblies aligned to the goals of the strategy.
- Belfast City Council is aiming to have four technology-specific, place-based growth clusters by 2030, where innovative business co-locate key assets.
- Belfast is also working to establish a Retrofit Hub to upskill workers, increasing capacity of the construction sector and helping to share materials.
- All-Island Circular Economy Think Tank could be further developed to create synergies on the transition in terms of research and development and economic activities, for example the alignment of communication campaigns and shared learning.
- Creation of a Circular Economy task force with representatives from DAERA/DfE, FSB, CEFNI, Manufacturing NI, Ulster Farmers Union, Hospitality Ulster, Invest NI, Queen's University Belfast, Ulster University, Council Waste Services, International Synergies NI, NIRN. The task force would increase understanding of local resource flows and barriers to circularity. It would then identify solutions for trialing scalable industrial symbiosis in key sectors.
- Mapping areas of industrial symbiosis to identify strengths and opportunities. It could then be used to inform planning strategies.
- Involve sector representatives and trade bodies in the development of any networks and clusters.

- Representation from not just industry but also policy makers, practitioners and academia on any network or cluster.
- Increase awareness of the social enterprise model and how it could interact and support any networks and clusters.
- Greater investment in and support for community-level organisations to drive behavioural change and help people make different lifestyle choices.
- Breastfeeding networks to provide resources and support for new mothers.
- Enable current students to become the Circular Economy practitioners of tomorrow via a network/consortium of education institutions and businesses that will design and develop Circular Economy training programmes.
- Collaboration in applying for UK Research and Innovation (UKRI) funding and the levelling-up agenda – with the caveat that assistance would be required in making successful applications.

Circularity in Public Procurement

Public sector procurement in Northern Ireland commands annual buying power in excess of £3 billion. That represents strong potential to shape markets and behaviours through the development of specifications and contract clauses to retain the value of materials – for example, purchasing refurbished computers or supporting leasing business models. In turn, this creates opportunity to influence the maintenance of the public estate, supply contracts including food and waste as well as delivery of infrastructure and capital projects.

How do you think public sector procurement can best influence the behaviours of industry to increase circularity of resources?

There were 77 responses to this question – the most of any optional free-text field – which demonstrates the interest in this issue. From the analysis the following six broad themes emerged. Respondents also provided a number of examples of circularity in public procurement, which are included within the Annex.

1. Product design, innovation and collaboration
   - **Foster collaboration** and partnerships between businesses, government and communities to create a shared vision for a Circular Economy.
   - **Establish cross-departmental collaboration** within government to drive systemic change and embed Circular Economy practices across all sectors. Central and local government should work together to produce a green public procurement strategy.
   - **Engage with suppliers** to identify new models and to encourage innovation. Circular procurement can require a shift from technical specifications being set by the procurer to a process where specifications are set following engagement between the two parties.
   - **Encourage sustainability** in technologies and practices.
   - **Promote innovation** through business models that support a Circular Economy.
   - **Provide incentives**, funding and resources for research and development.
   - **Support cross-sector learning** and collaboration to drive innovation and adoption of best practice.

2. Procurement policy and standards

- **Implement** Circular Economy principles in government contracts, including criteria and scoring for product design, recycling and resource efficiency.
- **Ask tenderers**: 'What does the product consist of and what is the plan for its end of life?' rather than specify a percentage of reused materials.
- **Include specifications** and standards requiring the use of locally sourced and manufactured materials.
- **Share learnings** from the implementation of PPN 01/21[2] across the public/private and third sectors. Consideration should be given to developing a further Procurement Policy Note relevant to Circular Economy principles.
- **Make scoring of social value more ambitious**, by increasing the minimum weighting to 20% and lowering the services and works thresholds where procurement regulation applies for public bodies.
- **Implement green public procurement** (GPP) policies to drive market demand for sustainable products and services.
- **Adopt legislation, policies and targets** to reduce embodied carbon in products and supply chains, reducing waste, including single-use plastics, increasing recycling and promoting sustainable design to deliver social value.
- **Build in circularity** through the entire commissioning cycle from business cases, contract specification and selection criteria.
- **Restrict contracts** in high-risk sectors to businesses committed to circularity.
- **End 'silo purchases'** within government by establishing a centralised contracting unit for all the NICS.

3. Increasing circularity in the supply chain

- **Move away from price** as sole or predominant basis for procurement. This comment was made in relation to waste management services.
- **Make companies responsible** for the waste they produce and its treatment, requiring them to track and monitor it.
- **Encourage** the development and use of sustainable materials and products by standardisation of components and certifications that prioritise reuse of materials. Ensure guidelines and frameworks are clear and consistent for businesses and industries.
- **Promote circular practices** in the construction industry by refurbishment and adaptive reuse of buildings and use of sustainable building materials and methods.
- **Foster transparency** and honesty by requiring businesses to report on their Circular Economy progress and performance. This would include use of quality and environmental management systems such as ISO9001 and ISO14001.

2 Further information is available in the Procurement Policy Note 06/20 – taking account of social value in the award of central government contracts (external link opens in a new window/tab)

4. Education, training and capacity-building

- **Provide resources**, guidance and incentives to support businesses in adopting circular supply chain practices and support the adoption of circular business models, such as product-as-a-service and take-back schemes.
- **Training should be mandatory** and provided to public and private sectors to increase engagement and assessing whole-life cycle assessment for products and services.
- **Support education and training initiatives** to increase knowledge and skills in Circular Economy principles and practices.
- **Encourage** cross-sector collaboration and knowledge-sharing.
- **Promote behaviour change** among consumers and businesses by promoting awareness of the environmental, social and economic benefits of a Circular Economy.
- **Invest** in locally produced products and skills to create local crafts that will support sustainable production practices.

5. Societal benefits

- **Promote community wealth-building models**[3] that emphasise local economic development and resource management.
- **Explore the opportunity to improve equality** through procurement and contracting. When those who are marginalised are engaged in the process, then there is a greater opportunity to deliver the maximum impact and provide an environment that helps all people reach their potential.

6. Infrastructure

- **Invest in infrastructure** and systems that support a Circular Economy, such as refill stations, recycling facilities and repair services.
- **Promote anaerobic digesters** to treat organic waste from government facilities.
- **Highlight opportunities to support growth** through procurement in renewable energy and energy efficiency in all sectors.

3 Further information is available in CLES, What is Community Wealth Building? (external link opens in a new window/tab)

QUOTES

"Closer work from the public sector with the SME market or social enterprise and charity organisations could be a mechanism to influence behaviours and source innovative solutions. We need to challenge current thought processes as to what is important in how we get outputs. The process should not stymie that ability to bring change."

"Public Sector Procurement must adopt one of the models for implementing circular procurement: a) system-level model to ensure circularity through a 'take-back' agreement with suppliers taking the product back at the end of its use to reuse, remanufacture, or recycle it ; b) supplier level model, with circularity already embedded into suppliers' systems and processes; c) product level model, with product specifications are already meeting circularity criteria. It is also essential to create a circular procurement policy or include the Circular Economy principles in existing green Public Procurement (GPP) or Sustainable Public Procurement (SPP) policies. It is a practical first step to ensuring that a Circular Economy is a visible priority."

"While public sector procurement can play an important role in the move towards greater resource circularity, it is not a 'silver bullet' and needs to be considered as part of a wider package of policy measures that might also include targets, regulation, taxation, planning law, standards, communication activities and funding provision."

Platforms and Hubs

To improve the use of resources and retain their value, people and businesses need to know what is available, where it is and what condition it is in. Space is also required to store these products and materials.

What sorts of platforms do you think would be most useful in the future to enable people and business to share and reuse products and materials?

The analysis of responses to this question can be grouped into four themes, as set out below. Respondents also provided examples and case studies, which are included within the Annex.

1. Online Digital platforms

The responses showcased various online platforms and digital solutions – such as Facebook Marketplace, Freegle and Olioex – that facilitate the exchange of resources and promote circular practices. Websites like RepairMyStuff.ie and platforms such as Recipro-UK.com, CE-Hub and Kudoti show how digital solutions can connect people and industries, allowing for better waste management, repair and collaboration on sustainable initiatives.

- There were many calls for collaboration with and within government to support the development of new digital platforms and ecosystems that encourage circular practices, information sharing, resource sharing, energy sharing and community engagement.
- One response advocated for online platforms to provide accurate, transparent information for all sectors on supply chain data, circularity, metrics, policies and regulations.
- Another suggested the creation of a standalone website or app to map and signpost stakeholders to reuse/repair/remanufacture markets, along with a hub to connect all organisations involved in delivering environmental education, information and capacity-building to communities and individuals.

2. Community Initiatives and Collaborative Networks

This theme highlights the importance of local initiatives like the Belfast Repair Café, bike-sharing programmes and community tool-sharing schemes. By establishing collaborative networks and connecting people to resources, these community-driven projects encourage sustainable practices and reduce consumption. For instance, the re-paint schemes and the various collaborative networks, such as the Northern Ireland Resources Network, foster resource exchange and knowledge-sharing among community members.

- Many suggestions under this theme were place-based, including: university students on campus who could share furniture, books and food; a neighbourhood platform for baby clothes and toys; community fridges; and communal gardens and allotments.
- Engagement with supermarkets and cooperatives who have experience of food sharing was considered necessary.
- Community platforms were promoted because they could facilitate borrowing, sharing and reusing items, for example during a house clearance or renovation.
- Four respondents commented that initiatives should be developed in the interest of communities rather than big business, and that central government or local council financial support is needed to ensure the initiatives perform their purpose.
- Another highlighted an opportunity for councils and industries to work together on platforms that support the local recovery of returnable packaging for reuse. Vesselworks, which collects and recovers coffee cups, was cited as an example.
- A sharing platform was suggested for farmers within a locality to share equipment across farms and therefore reduce the cost of business.
- One comment recommended investment in infrastructure that would help charity shops catalogue what they have available to help customers find what they need and cut down aimless browsing. This online hub could be supported by local hubs which help people repair clothing.

3. Industry-related platforms

Respondents highlighted industry-specific initiatives like the Green Building Council and the use of recycled resources in aerospace manufacturing. Examples like TerraCycle and recycling programmes within the aerospace industry show the importance of waste management in reintroducing materials into production cycles.

By focusing on industry-tailored strategies – such as modularity in product design and off-site production – these initiatives can help reduce waste, enhance energy efficiency and promote sustainable practices across various sectors.

There were many calls to foster industrial symbiosis and knowledge-sharing to support circular practices in various industries, such as construction, manufacturing and aerospace.

- One response suggested a public inventory of materials available from a building prior to demolition as a means of connecting demolition projects to new building projects to optimise material use. It could be informed by pre-demolition assessments, which could be made compulsory through CPD as part of the Social Value work.
- Another respondent advocated the need for **construction-related platforms** to incorporate ‘passports’ containing data on production, maintenance, reprocessing, refurbishing or recycling of the materials.

- Another advocated the use of **material passports** to provide assurance that they comply with regulations and standards. They also promoted the idea of buildings as banks of materials.
- **Encourage and support the development of eco-parks** and other initiatives that promote sustainable business practices.
- **Foster collaboration** between commercial and third-party sectors to improve product standards and competitiveness.
- **Introduce platforms for employees** to buy, sell or swap items – promoting a culture of reuse and recycling within organisations. Also facilitate the repair of phones and IT equipment within a business.
- **Support and incentivise SMEs** to engage in platforms. For example, they may need storage equipment to start collecting the materials/products. They should also be trained in how to measure and promote what they have done as improving their social and green credentials.
- Create platforms to give **access to 3D printing**. 3D printing is considered useful for reducing waste in manufacturing, but the platforms would help businesses who only use the technology on an ad hoc basis.

4. Education, Awareness and Consumer Behaviour Change

Respondents indicated the importance of educating people about the Circular Economy. Raising awareness through platforms encourages a shift in consumer behaviour, resulting in increased support for sustainable practices like repairing, upcycling and reducing overconsumption.

There was a call to reduce the stigma associated with second-hand items and promote the acceptance of upcycled and reclaimed products. Users of any platform need to have confidence in quality and pricing must be competitive.

Discover Water was identified as a platform which engages with consumers to educate them on the value of water. The same respondent also advocated for water meters, citing research showing how the installation of meters in homes resulted in 20% less water use than unmetered homes.

Other comments and suggestions

- Numerous respondents highlighted the need for evidence and data on resources currently available and a full-scale supply chain analysis for all items consumed.
- A few suggested replicating the synergies platform for a wider range of materials. Data must be collected across business and industry to identify the stocks and should include chemicals and all products bought and consumed.

- A centralised approach to this tracking system would be used across the UK. The proposed digital waste tracking system could help with compiling the data.
- Some called for government to lead the way, and help create platforms to align approaches, e.g. to tackle food waste across central and local government.
- One comment highlighted the risk that people could be circulating badly-made goods containing potentially toxic/hazardous materials, and in doing so displace better-quality products designed for reuse.
- Some respondents were keen to ensure access to platforms for non-internet users, ensuring equal opportunity for participation in circular practices.
- Existing waste regulations were identified as the big barrier to keeping stuff in use. The waste permitting process was considered unnecessary, too complicated and time-consuming. The point was made that for platforms to work, they need the support of government policy and levers.

QUOTES

"A collaborative, digital platform to share and reuse products and materials which is well designed and easy to use. Such a system could be developed based around the experiences and lessons learned of existing platform providers, including those from within the commercial, public and third sectors. The quality of the products and materials available would have to be of a sufficiently high standard and therefore robust quality control is essential in building confidence within the market of those looking to acquire products/materials. Pricing of products/materials would have to be competitive."

"We think that there should be a proper tracking system used for materials, chemicals and all products that are bought and consumed/used etc. We think that this should take a centralised approach that can be used in Northern Ireland and across all of the devolved nations. This obviously will be difficult with products that are brought in as exports, compared to items and products made directly in the UK, but we should try to do this nonetheless."

"Initially there is a need for more methodological research to identify what exists now, and then to develop from there."

Role of government in maximising the value of materials locally

Keeping products and materials in use helps retain their maximum value, while simultaneously lowering demand for material extraction to make new products. Increasing the repair and reuse sector can help deliver this – doing more with natural bio-based materials locally available as well as growing the reprocessing sector.

What are the most effective tools that government could use to encourage and facilitate business and society to extend the life of products and services to keep materials and resources in use for longer?

The bar chart shows a snapshot of some of the main topics covered in the responses in order of those considered most important.

Figure 5: Relative weighting of the most effective tools to extend the life of products and maximise the use of materials locally.

These main topics have been further grouped into seven categories below, which provide valuable insights across a variety of areas on how government should shape its delivery.

1. Product Design & End of-life product management

- Several responses mentioned the importance of **sustainable design**, which considers the full life cycle of a product and called for government to set minimum standards. This includes designing products for repairability, recyclability and modularity. It is intended to ensure there is a route for the end of life and should stop designed-in obsolescence. It would also mean implementing standardisation of components to create eco-friendly products with lifetime warranties. One respondent suggested this should include the reuse of manufacturing equipment.

- Others highlighted the need for research and development into eco-design to improve product longevity and the development of sustainable materials and technologies.
- One response signposted a digital series on product life extension designed by the Circular Economy Hub to show the steps required to extend the life of products for different sector/ project categories.[4]

2. Repair

- There was a call to create a broad repair culture.
- Many respondents emphasised the need to **promote the "right to repair"** and ensuring products were designed for repair, reuse and recycling.
- This included a call to **expand the existing right to repair** to a wider range of products.
- At present, there is a skills deficit in those able to repair low-carbon technologies. This discourages people from installing them, particularly heat pumps and mechanical ventilation with heat recovery. There were calls to engage professional and non-professional repairers through training, apprenticeships and reskilling programmes to address this barrier.
- Many wanted to see the right to repair extended to include electrical items for businesses as well as households. One respondent advocated **extending right to repair legislation** to ensure community repair initiatives as well as professional repairers can participate in repair schemes with access to product manuals.
- Some respondents advocated a right to repair vision that would go beyond individual consumer products to **include remanufacturing** and use of warranties to cover the expected life span of products, engaging with manufacturers and producers to develop repair and maintenance programmes.
- One response identified the following as essential **components of any right to repair initiative**: a good network of reputable repairers covering the whole of NI, with the right skills, knowledge and business acumen; access to suitable manuals and replacement parts; competitive price of repair and a warranty to cover the repair work.

3. Industry-specific

- A number of industry-specific suggestions were made, including prioritising local and sustainable food sources in the catering industry; adopting sustainable waste management practices in tourism; implementing waste reduction and recycling initiatives in educational institutions; supporting responsible consumption and recycling practices in the fashion industry; promoting use of renewable energy sources in the transportation sector; and encouraging eco-friendly practices in the gardening and landscaping industries. One suggested incentivising organisations to provide apprenticeships in handling and repairing secondary market goods and mandating warranties on secondary goods.

4 (a) Further information is available in CE-HUB Knowledge Hub Archive (external link opens in a new window/tab)
(b) Further information is available in CE-HUB Digital Series: Extending Product Lifespans (external link opens in a new window/tab)

- The following points summarise the views on government tools which could be used to increase resource efficiency in the built environment:
- Introduce the EU standards for 'design for adaptability and renovation' and green public procurement for all publicly procured buildings in urban locations.
- A respondent cited the WRAP paper, 'Net Zero: Why Resource Efficiency Holds the Answers'[5] and recommended that government work with industry to develop a standard for the whole-life carbon footprint of buildings and infrastructure.
- Include an adaptability assessment during the planning application, as part of a new development's Environmental Impact Assessment.
- Introduce a cost/benefits analysis for all new developments. This would compare the new-build cost to renovations or reuse of an existing local building.
- Put a cap on the environmental impacts of any development that would require applicants to demonstrate measures taken to facilitate reuse/renovation, deconstruction and disassembly.
- Adapting and complying with best practices in the construction industry; and prioritising building maintenance and adaptation over demolition and rebuilding.
- Electronic vehicles and plastics were both cited as problematic requiring focused effort. Some promoted **engagement between academic research and industry** to develop internationally competitive sustainable electric vehicle (EV) battery design that also incorporates use of secondary critical minerals, along with the provision of domestic waste and recycling infrastructure including for EV batteries. Plastic creates unique problems at the end of life which need to be considered. If additives have been used in the production of a product to make it safe, e.g., flame retardants in electronic goods, it is nearly impossible to remove these at the recycling stage. This then limits the reusability of the plastic. A number highlighted the need to consider all these issues when processing particular materials before regulations or standards are introduced.
- One response called for policy to support the expansion of the biogas and biomethane industry in Northern Ireland, including incentivising the production of biogas from organic wastes, allowing further processing of digestates and permitting the use of bio-CO_2 from separated biogases in industry.
- Food was also highlighted, with one response calling for the extension of food regulation to all business types and for household food waste to be collected separately and sent for anaerobic digestion.
- One response proposed a central body for managing a Waste, Electrical and Electronic Equipment (WEEE) allocation system to stimulate greater circulation of products.
- Another response suggested that producers should not be permitted to manufacture anything until they had **identified local repair, re-use or recycling services** which could be used at the end of its first life.

5 Further information is available in Net Zero: why resource efficiency holds the answers (external link opens in a new window/tab)

4. Government involvement: legislative proposals

- Require manufacturers to take responsibility for end-of-life.
- Ban production of products designed with built-in obsolescence.
- Oblige manufacturers to release schematics and specifications when they discontinue a product, so others can produce/repair it.
- Transfer all liability to citizens if they chose to take items from recycling centres. This would allow more people to access goods that others have left.
- Require suppliers to provide products that will be repairable for at least 10 years.

5. Government involvement: fiscal proposals

- Reduce tax on upcycled goods and compostable or recyclable packaging.
- Introduce a tax break for longer-lasting products.
- Introduce subsidies on reclaimed and recycled materials to enable them to compete against virgin materials.
- Reduce VAT rate on the sale of second-hand appliances and product leasing.
- Remove VAT on labour associated with the repair to make repair more affordable.
- Introduce fiscal incentives to lease products rather than selling them.
- Reduce corporation tax for circular business practices.
- Introduce tax incentives to direct organic waste from industry to biomethane production for gas network injection.
- Build upon plastic bag levy and extend it to beverage containers.
- Tax on non-essential single-use items which cannot be repaired or re-used.
- Increase landfill tax and tax on export of waste.

6. Measurement and monitoring

There was a recognised need for clear targets, monitoring and reporting on progress, including tracking product design efficiency, ensuring compliance with legislation and evaluating the effectiveness of policies and strategies. The following points were also made in relation to measurement:

- Data collection and analysis is fundamental to ensuring policies are evaluated, reshaped and improved.
- Modelling and simulation tools should be used to provide recommendations with guidance on solutions that will help business and society extend the life of products.
- Carbon balance should be considered when repair and remanufacturing are undertaken to ensure there are no unintended consequences as a result of the use of energy.
- The value of repair, reuse and remanufacturing must not just be assessed in monetary terms, but also factoring in the value of skills, health, wellbeing and ecological resilience. The Well-being of Future Generations Act 2015 in Wales was cited as instrumental in changing mindsets to think about the long-term impact of decisions.
- Government should ensure critical mineral use and reuse is mapped and tracked.

7. Education, communication and awareness-raising

Many respondents mentioned the need for behavioural change, including the need for people to be provided with sufficient information to make an informed purchase. France was given as an example. In 2012 a mandatory repairability index was introduced in the country for some home appliances and consumer electronics products. It provided consumers with information about how easy they would be to repair.

Other comments included:

- Need to consider the impact of interventions to ensure a Just and equitable transition.
- Make interventions easy to adopt. People don't want to have to travel to dispose of waste, so promote initiatives such as recycling batteries and plastic wrapping, etc. locally – for example at supermarkets.
- Introduce recycling stations in workplaces.
- Use ecolabels to inform consumers about product reparability and carbon footprints. The relationship between the retail industry and its customers could be used as a channel to help customers understand the carbon impact of their purchasing decisions.
- Collaborate with industry on training and skills development to ensure those trained in repair are not considered a threat.
- Responsible consumption should be promoted by making sure society understands the impact of waste on people and place and how extending the life of products can help.
- Everyone should know where and how they can get items repaired. This would require extensive communications campaigns, online knowledge hubs and resources. There are existing platforms which could be better used, e.g., further information is available in Repair My Stuff (external link opens in a new window/tab).
- Government should pursue both short and long-term culture change by promoting the idea of the Circular Economy through various media over a prolonged period, supported by sustained investment.

Other government tools

Responses advocated for strong governance and Circular Economy targets within central and local government; sustainable procurement and purchasing policies; and programmes to encourage corporate investment in sustainable business models and practices.

The following provides further detail on the comments received under this theme:

- Collaboration between government, industry and other stakeholders was highlighted in many responses and included partnerships with councils, non-governmental and international organisations to share best practices, resources and knowledge.
- Identify sectors that use the most resources and where the potential for circularity is high, e. g., electronics, ICT, batteries and vehicles, packaging, plastic, textiles, construction, food and water. Tailor policies and strategies to address the unique challenges and opportunities within each sector accordingly.
- Some comments stressed the importance of investing in infrastructure to support the transition to a Circular Economy, such as facilities for repair, reuse and recycling and the development of domestic recycling infrastructure.
- More stringent action to be taken against illegal dumping and littering with the use of CCTV, with severe penalties for offenders. Another suggested the need for tighter regulations on recycling companies.
- Government should consider how it could support lower-income households, creating jobs within the repair, reuse and recycling industries through the development of new policies. Respondents did not want citizens to carry the burden of any changes, while acknowledging the pivotal role they play, they wanted to see consumers protected against miss-selling, greenwashing and premature obsolescence.
- Practise responsible consumption through smart spending and resource allocation to promote sustainability and reduce waste.
- Recognising the role of charity shops in redistributing second-hand goods, one respondent proposed additional support, including 100% rates relief. Other suggestions included collection banks and funded access to products for reuse/resale.

QUOTES

"There is a need to 'socialise' the idea of the Circular Economy and to affect not just behaviour (short-term) but culture (long-term) change. As the draft strategy has highlighted, there is poor recognition of what this means in practice and if this is to gain traction, it needs to be promoted over a sustained period using multiple media sources."

"A number of the suggestions are things that would extend the life of products and keep materials in use for longer, such as our proposals around helping people to find second-hand clothing and to repair clothes that need alteration or mending. These require investment by government in order to reach a point of sufficient use to make an impact on these goals. This investment involves both potentially investment in people and skills and most critically investment in infrastructure."

Funding priorities

Unlocking benefits at scale will require the government to create incentives that will enable Circular Economy solutions to succeed.

Which of the following interventions should be a priority focus for government funding?

Respondents were asked to rank a list of interventions in order of priority, with 1=highest and 9=lowest. They were then given an opportunity to provide comments.

- Research and development
- Secondary material markets
- Circular supply chains
- Digitisation and technology
- Job creation
- Waste reduction
- Carbon emissions reduction
- Reuse and repair
- Environmentally focused solutions

The responses were plotted by the number of first- and last-placed votes. The results are shown below.

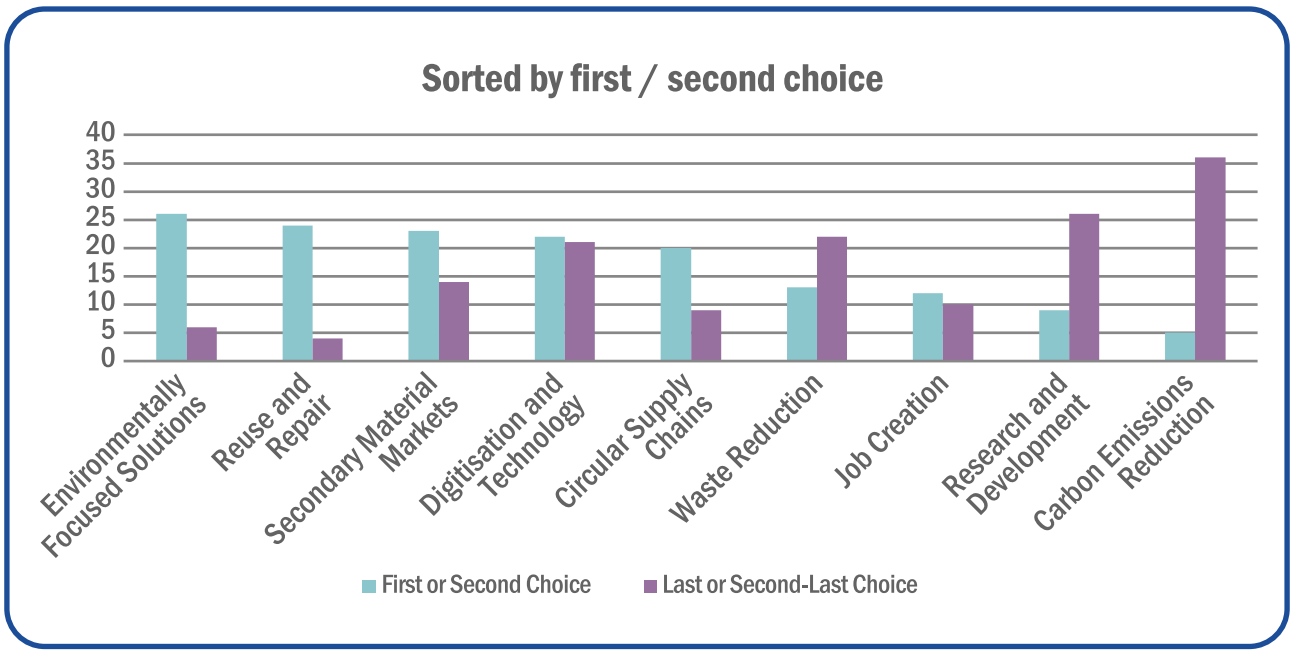


Figure 6: Ranking of government interventions by priority (first & last choices).

The chart shows, Environmentally Focused Solutions and Reuse and Repair ranked at the top, with Research and Carbon Emissions Reduction among the lowest-ranked. While respondents ranked the interventions as requested, the comments show they struggled with this request for several reasons.

Over 30% of those who provided comments considered the interventions to be interlinked and struggled or disagreed with ranking them in any priority order.

- They believed none of the interventions would be delivered in isolation and viewed this ranking process a contradiction of the principle of a systems approach. Adopting whole-complex systems thinking is an essential first step to changing the rules of the game and focusing in one area, without consideration of others is unlikely to generate the desired outcomes.
- Some described the ranking process to be arbitrary because all of the interventions were considered essential. They suggested that most interventions could be seen to fall under a heading of 'environmentally focused solutions'. Another felt there was not enough context provided for each of the interventions.
- Two respondents advised against prioritising the interventions at all, in the absence of sufficient data and analysis to provide a baseline and establish current gaps and limitations.

Comments on the interlinkages and interdependencies

- Research and development will support job growth; supply chain and secondary material market will come naturally as Northern Ireland transitions to sustainable consumption supported by digitisation and technology.
- Some considered Research & Development to be the top priority to enable the other interventions.
- Research into critical raw materials/minerals was considered a top priority by another, as it is one way of sourcing raw materials more responsibly, helping to demonstrate new applications, improving efficiency and pushing boundaries with regard to supply chains.
- Circular supply chains should automatically have an effect on waste reduction and reduction of carbon emissions.
- Developing nature-based solutions would accompany research and development, e.g., the development of seaweed as a packaging material.
- To enable circular supply chains, there is a need for resource-matching across the whole island.
- Expertise and funding should be aimed towards SMEs within secondary material markets to incentivise change and help drive down Scope 3 emissions in supply chains.
- Extended Producer Responsibility (EPR) and Deposit Return Scheme (DRS) will help embed some of these interventions.
- Carbon emissions reduction was mentioned several times, including a call for a clear and widely accepted tool for carbon accounting that could be applied across the board. If this was available, then the carbon interventions could be prioritised as it would drive all other activities.

<u>Other comments and suggestions</u>

- Reliance on digitisation and technology may have unintended consequences, e.g., the environmental impacts and energy requirements of data centres.
- Behavioural change, education and communications should be prioritised, given the low level of understanding of the Circular Economy at present. Reducing waste should be the first message of the circularity agenda.
- Job creation should not be a goal in itself, but where is it being pursued, those new jobs should be green, and action must be taken to ensure existing gender gaps are addressed in future job creation.
- Biotechnology/technology was called out by one respondent as a priority to discover potential solutions, e.g., use of micro bots to break down waste.
- Community-led solutions should be identified and promoted.
- Investment is required across the value chain, including the infrastructure for reuse, recycling and recovery of materials.

- There needs to be better alignment between policy objectives and operational practices.
- Include circularity as a requirement in all business cases for funding.
- Growth of geoscientific knowledge and training is important to identify and source critical minerals that will secure local supplies of critical raw materials.
- Prioritise the creation of a more circular chemicals economy.
- Government intervention is required to create and secure markets for secondary materials, which often cost more to produce and can be lower quality.
- Use challenge funds to explore and identify interdependencies of the potential funding interventions.

QUOTES

"With carbon emissions reduction, waste reduction and reuse & repair would come increased job creation, with the need for new skills and innovation to deal with resources. These, along with digitisation and technology, feed into circular supply chains and secondary material markets... indicating that each of these listed priorities does not act alone."

"We strongly believe that the first and second interventions, environmentally focused solutions and carbon emissions reduction should underpin all of the items on this list and the entirety of the strategy. Additionally, aspects of digitisation and technology will help in the creation of circular supply chains. However, not all digitisation and technology will aid in achieving the aims of this strategy. For us to properly evaluate the priority focus for government funding, we need an in-depth understanding of their role in the strategy. Based on this list, all of the interventions should be funded and prioritised: it would be nearly impossible to achieve any one of the items listed without simultaneously funding and prioritising the others."

Funding instruments

What funding instruments do you consider would be most appropriate in years 1-3?

The consultation listed three funding instruments: loans, grants and subsidies and blended finance.

Respondents were asked to rank the funding instruments in order of preference, with 1=most preferred and 3=least preferred.

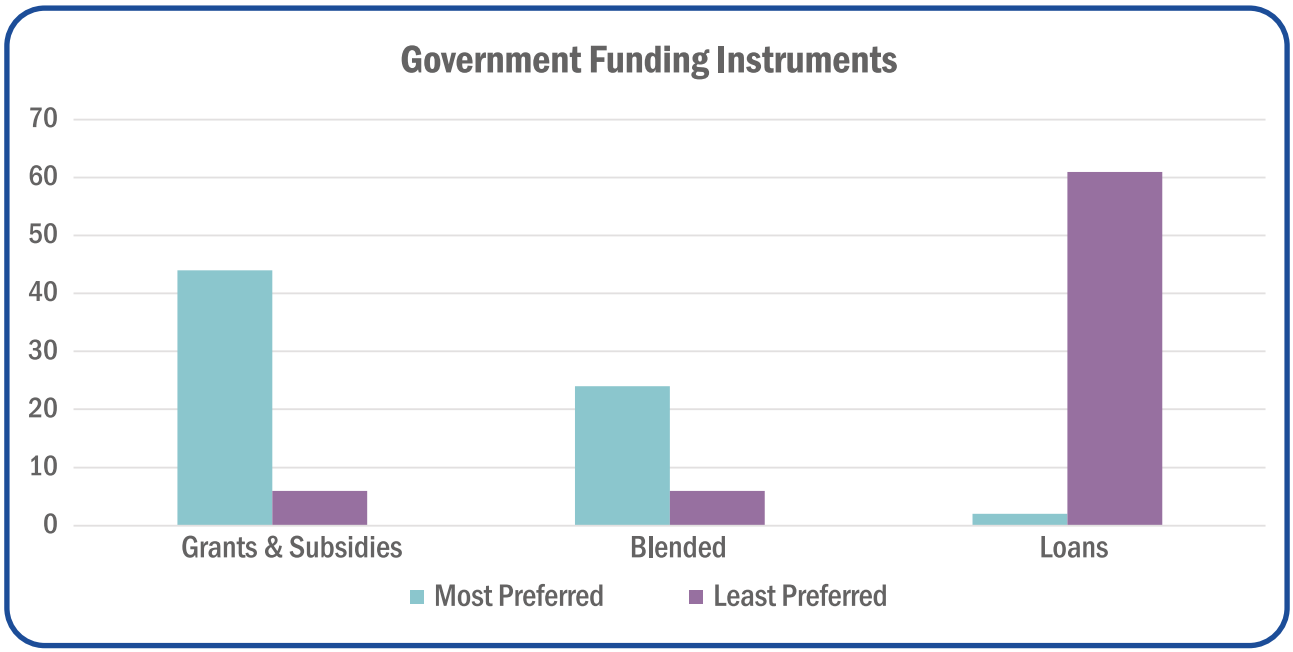


Figure 7: Ranking of government funding instruments.

From the responses shown on the bar chart above, the majority (44) preferred the use of grants and subsidies as funding instruments in the first 1-3 years as a first preference, with blended finance being the next preferred option (24) and loans the least preferred choice (2).

Respondents also provided examples of research and case studies, which are included within the Annex.

Do you have any further comments to make on funding instruments that could be used to enable Circular Economy solutions to succeed?

Substantial commentary was provided across a variety of funding related topics. Some of their key points included:

- funding instruments should be tailored to each given situation
- funding can serve as a tool to discourage and dissuade non-circular practices
- the importance of governance, KPIs, outcomes and targets
- the importance of awareness campaigns and education

Classification of Funding

A number of responses provided detail on the following classifications of funding instruments including: disincentives, incentives and nudges.

Disincentives

- Taxation on resource consumption and reduce taxes on labour.
- There was a call to see profits on poorly-made products further taxed to ensure the goals shift from profits-driven to environmental protection.
- Removal of subsidies on polluting industries was also suggested.

Incentives

- Remove VAT on Circular Economy-positive production/consumption activities.
- Remove/reduce stamp duty for smaller square-footage housing/buildings to discourage people from building and buying large dwellings.
- Defer stamp duty on properties that have been purchased for refurbishment and resale, with the duty paid once the refurbishment has taken place and the property is sold. This was referred to as a 'green flipping' property business model and a new stream of retrofitting.
- Review VAT on refurbishment to make it a viable alternative to demolition and new build.
- Introduce heat incentives to help consumers switch or convert to low-carbon heating solutions.

'Nudges'/Behavioural prompts

- Consumer communication campaigns encouraging uptake of the circular offering in Northern Ireland to be introduced.

Four high-level themes were identified in analysing responses received, as follows:

1. Innovation and industry-focused funding
    - There were suggestions that incentivising innovation and research through grants and support for university spin-offs and collaborations could contribute to the growth of skilled graduates in the Circular Economy sector.
    - Two respondents wanted to see existing R&D funding be extended to include innovation projects that support the Circular Economy.
    - Some responses specifically highlighted the construction sector as a priority area for Circular Economy support, recommending the use of grants, subsidies and fiscal incentives through taxation adjustments.
    - They noted the long-term environmental impacts of material choices made today and how these limit the options for circularity in the future.
    - Some respondents also mentioned the potential usefulness of 'building passports' to track the progress of existing building stock and to encourage the adoption of Circular Economy solutions in construction.
    - Several comments noted that funding instruments should aim to make circular practices the norm, while making non-circular practices more costly. Some suggested the removal of subsidies and financial incentives for polluting industries to discourage non-circular practices.
    - One response made the point that blended finance needs to be designed to help those most in need. Where cost is a barrier, providing a focus on purchases with a high potential for circularity – such as electronics, white goods and vehicles – should be prioritised.

2. Governance and monitoring of funding

    - Some respondents called for a review of existing funding instruments to establish their effectiveness in terms of supporting the reuse of products and materials and to inform the design of further schemes.
    - A number of respondents mentioned the need to engage financial institutions and industry to explore sources of finance and to reduce reliance on the Block Grant. A couple of respondents cited the Green Investment Bank as an example.
    - The need for a cautious approach was stressed, with suggestions to review best practices from other sectors and regions and to avoid pitfalls like the Renewable Heat Incentive (RHI) and Renewable Obligation Certificates (ROCs) schemes.
    - Given the work to date on net zero, some thought the Department should take learnings from the finance schemes designed to reduce carbon emissions.
    - Some comments focused on the importance of setting clear goals, targets and desired outcomes before selecting specific funding mechanisms.

- There was also a call for clauses to ensure outcomes are achieved. Respondents mentioned a range of disincentives and incentives, such as taxation on resource consumption, reduced taxes on labour, removing VAT on Circular Economy-positive production/consumption and introducing Circular Economy bonds.
- A few respondents wanted to see applicants for funding and those in receipt to be accountable for their products, waste management and procurement practices to avoid greenwashing.

3. Education and awareness-raising
   - Education and systemic thinking were highlighted as essential for fostering a circular society. Respondents suggested integrating Circular Economy and systems thinking modules into secondary school curricula and higher education courses.
   - A respondent promoted communications around the 'real price' of products, including the external, whole-life costs and environmental costs, in order for the financial sector to understand and compare the cost of linear and circular solutions.
   - Other responses asked for government to provide signposting to current sources of available funding, with calls for dedicated Circular Economy funding.

4. Social Value
   - A few comments called for a spend-to-save approach and support for local councils and community organisations, focusing on participatory and gender budgeting tools and prioritising disadvantaged groups.
   - Circular Economy-focused community cooperatives (community interest companies) were also put forward as a potential to create 'makerspaces' with a community or industry focus.
   - A number of respondents identified a need for multi-year funding for social enterprises and community groups with a proven track record of delivering the Circular Economy.
   - Several responses also expressed a desire for multi-year budgets, protected and ring-fenced from other public expenditure pressures.

Other comments and suggestions

- A number of respondents commented that they wanted to understand the desired outcomes from any funding better before forming an opinion on what would be the best funding instrument to use.
- Public bodies are thought more likely to prefer grants and subsidies, whereas businesses may require low-risk grants until solutions have been tried and proven before they could access higher-risk funding like loans.
- Councils were keen to ensure a balanced and fair approach that would not negatively impact local authorities as they embrace the Circular Economy. One council response highlighted the need for resourcing support to go along with financial incentives, saying otherwise proposals will fail. Another council requested the application of funding to provide training, innovation, research and upskilling.
- Grants and subsidies were thought necessary to prime the market, driving investment and supporting businesses to enter the marketplace to offer new services and products.
- The concept of blended finance was supported by many respondents, because it would be regulated and it can attract commercial capital for sustainable development projects while providing financial returns to investors. Tailoring the blend to different consumers, businesses and sectors was viewed as important. It was also considered a good instrument to share knowledge and risk, recognising the need to utilise all expertise to support delivery.

QUOTES

"Consumers have told us that one of the main barriers to adopting a more sustainable lifestyle is cost. It is recognised that significant financial support will be needed to help consumers in the transition to net zero. Targeted financial support as noted will be required to help consumers with purchases and behavioural choices to increase economic circularity."

"Blended finance attracts commercial capital towards projects that contribute to sustainable development while providing financial returns to investors. Creating blended finance platforms could be transformational for Circular Economy development in Northern Ireland, since joining public and private capitals would facilitate infrastructure projects that otherwise would be unlikely to reach a financial close."

An enabling regulatory framework

The draft strategy recognises the need for an enabling regulatory framework and sets out a variety of tools government could use, including the right to repair regulations.

Considering the EU right to repair regulation, what other regulatory tools do you consider government can use to stimulate greater circulation of materials?

The responses highlighted the need for a comprehensive approach to regulation, integrating various tools and policies to foster sustainable production, consumption and waste management within the Circular Economy. Respondents want government to develop a set of regulations based on the three core Circular Economy principles:

1. Design out waste
2. Keep stuff in use
3. Regenerate natural systems.

Respondents broadly agreed on the need to introduce additional regulations to support the transitions and high standards (environmental, quality, human rights) that would be required for global trade to take place.

The eight themes below provide a summary of topics discussed, with specific suggestions made by respondents underneath.

1. Policy and Regulation: Governments should create policies that encourage extended producer responsibility, right to repair, resource-efficient production, carbon taxes, sustainable public procurement and waste-collection systems.

    - Some respondents called for a move beyond the *right to repair* to a *presumption of repair.* This could be applied to the public sector, where products are currently replaced with new products. Government could introduce the presumption of repair, where it must be demonstrated that repair is not possible before replacement is authorised.
    - A couple of respondents also called for a review of existing Electrical and Electronic Equipment (EEE) regulations to better support reuse.
    - Regarding specific products and materials, there were some calls to expand Extended Producer Responsibility across all waste streams to include textiles and furniture, not just packaging or EEE.
    - The regulation governing end-of-life vehicles and batteries should be updated to support greater circularity and harmonise legislation with the big markets.

2. Incentives, Disincentives and Support Mechanisms: There were calls to implement incentives, disincentives, subsidies and support mechanisms to encourage the use of recycled materials, repairing over purchasing of new products and fostering the growth of Circular Economy businesses. One response referred to this as a re-balancing of taxes to reflect the value of materials vs. labour.

- Many respondents called for better use of tax to support greater circularity. Some acknowledged the limited ability of the Northern Ireland government to do this but advocated for the need to be involved in UK-wide tax conversations.
- In general, respondents wanted to see increased taxes or levies on virgin materials and any activities that cause high emissions and environmental damage on a sliding scale depending on percentage and type of virgin material or the level of environmental damage. The taxes would be complemented by subsidies to support responsible sourcing of materials and encourage the uptake in circular practices.
- Some suggested tax breaks for those who are developing reusable products or reusable versions of existing single-use products.
- Suggestions also included higher taxes on hard-to-treat materials, which could then subsidise research and development into sustainable alternatives, i.e. secondary (recycled) raw materials and reuse and repair.
- There were also calls for investment in research, development and adoption of innovative technologies like 3D printing, digital platforms and eco-design.

3. Ambition, Transparency and Fairness: Recognising the cost of delivering green policies, one respondent asked for transparency on how this cost would be absorbed in the economy and by whom. They suggested funding the changes via the plastic tax or another green tax to be ring-fenced for solving the problems.

- Another respondent called for economic targets that reflected circular ambitions – i.e., less focused on growth and more on sustainable use of resources.
- There was also a call to monitor and publish the social and environmental impacts associated with Northern Ireland's use of virgin materials.
- Some respondents advocated for a fit-for-purpose track and trace method to build an accurate overall understanding of material flows in and out.
- There were suggestions for better labelling on goods to raise awareness and help consumers understand the circularity of a product and what to do with it when they are finished with it.
- A couple of respondents advocated for proportionate and fair regulations, recognising that the cost of products may increase because of changes to the design, which some consumers may not be able to afford.

4. Standardisation and Monitoring: Developing standardised recycling and waste management systems, as well as monitoring progress through digital platforms, can improve efficiency and facilitate the transition to a Circular Economy. Data collection on pollution and waste management, across and within countries is also vital for evaluating the success of regulatory measures.

    - There were calls to adopt new resource-efficient requirements, forcing manufacturers to design products for durability and repairability. In addition to disclosing details on repairability, one respondent called for manufacturers to be required to disclose impacts of the full life-cycle of products.
    - A further suggestion advocated for the standardisation of components, which could be linked to NI Public Procurement Policy.
    - Another suggested the promotion of international standards within public procurement contracts.
    - Safety was also raised as a consideration, especially if electrical products are being designed to be taken apart.
    - Several recommended following the European Commission Circular Economy Action Plan with its regulatory tools to drive innovation along the entire life cycle of products.
    - In terms of enforcing these standards, it was suggested by one respondent that the Northern Ireland Environment Agency should lead, although it would require resources to do so.

5. Education and Collaboration: Respondents called for programmes focused on educating consumers and raising awareness of Circular Economy principles to help drive informed choices and promote sustainable behaviours.

    - Cooperation among businesses, governments, consumers and international organisations is considered essential for sharing knowledge, best practices and scaling Circular Economy initiatives.
    - To support repair, there was a call for collaboration between the manufacturers of products and those likely to undertake the repair, reuse or recycling.
    - Respondents also identified the need to increase access to spare parts and repair documentation/manuals.

6. Enforcement: There was a call for better enforcement of existing regulations and to ensure consistent compliance applied to both private companies and public bodies. One suggested the imposition of fines or charges proportionate to the profits/budget of a company/ organisation. Another comment suggested focusing efforts on enforcing the regulations that are already in force in conjunction with introducing new ones.

With regards to waste, there were proposals for increased resources and efforts to enforce against littering and illegal dumping. Throughout the responses, there were calls to prohibit the production and sale of specific products, along with restricting certain operations.

Here is an overview of those suggested bans put forward:

- single-use plastic products
- all non-recyclable or hard to recycle products and materials, including products where no process has been identified to deal with it at the end of its first life
- landfilling or incinerating any unsold or returned goods that are in good condition
- certain toxic chemicals.

7. Built Environment: Policies and practices that prioritise repair, maintenance, retrofitting and energy-efficient designs in the built environment were promoted.

- Some respondents advocated changes in planning policy and building regulations to stimulate the circulation of materials in construction.
- One respondent wanted government to prioritise the water efficiency of buildings alongside energy efficiency programmes.
- Focusing on the design stage of building and infrastructure, respondents suggested that projects be required to set out the demand for resources and the full environmental impact at the planning stage.
- One suggestion also included setting restrictions on both resource usage and the environmental impact and imposing conditions to require adaptability and deconstruction.
- A couple of respondents wanted to see government, via partnership with industry, develop a standard for calculating the whole-life carbon footprint of building and infrastructure.
- Lastly, a small number of respondents suggested more retrofitting schemes to bring empty homes and derelict buildings back into use.

8. Waste Management: There were many comments received regarding the role of waste regulations and data on waste. The collection and sorting of waste are considered critically important to create secondary markets for materials.

- A few respondents identified a need to update the definition for waste to allow easier classification and to support the reuse of materials without having to get a waste carrier's license, which is costly, or an end-of-waste certification.

- There were some calls to improve collection and monitoring of waste data for collections, treatment and end destination. The digital waste tracker system is seen as a potential game-changer in terms of gathering data and evidence to inform any changes to the system.
- The following changes were put forward by a few respondents regarding the current collection systems:

  - Introduce a single system for domestic and non-domestic waste, with a future intention of only collecting materials which can be recycled and utilised in local markets and with nothing being incinerated or landfilled.
  - Introduce dry recycling regulations with in-scope materials to increase recycling levels and provide quality materials to secondary markets.
  - Limit the acceptable level of contamination in waste streams – for example, not allowing more than 5% contamination in food waste.

QUOTES

"Government could promote product lifetime extension, product light-weighting, through new resource efficiency requirements, similar to those in the Environment Bill. Working with industry, government could develop a standard for the whole-life carbon footprint of buildings and infrastructure. It could consider how building regulations, planning policy and public sector procurement requirements can stimulate greater circulation of materials."

"Update the definition of 'waste' to allow easier classification as resources or by-products that can be sold, distributed, re-used or re-engineered without the need for a company to gain a waste carrier's license or a costly or lengthy process to achieve end of waste certification for the resource material they wish to use in the Circular Economy."

Development of Skills

Unless Northern Ireland plans, anticipates and adequately resources for the transition to a Circular Economy, skills shortages could derail long-term goals for circularity and jobs growth.

Some jobs in traditional sectors will be lost while demand for new skills will increase. For example, the demand for diesel engineers will decrease as demand for those skilled in electric vehicles will rise.

What three skills do you consider will be most critical to supporting the Circular Economy?

Respondents were provided with three open-ended text fields for their answers. Responses have been categorised under four key themes, as presented below. This chart proportionately illustrates the dominance of the 12 key skills as identified by respondents.

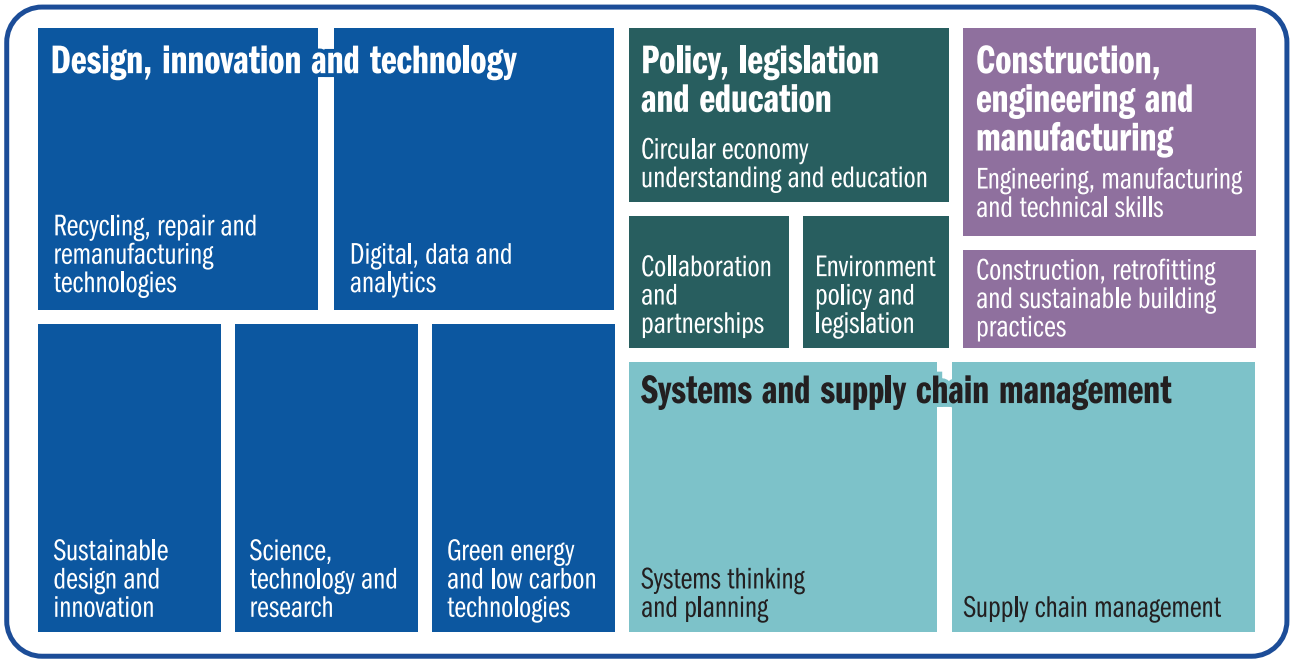


Figure 8: Critical skills to support the Circular Economy in Northern Ireland.

The following high-level summary of each skill within the four categories provides further details on the suggestions made by respondents:

1. Design, Innovation and Technology:

- Recycling, Repair and Remanufacturing Technologies
  This includes skills related to recycling technologies, product repair, maintenance, retooling, repurposing and remanufacturing. The focus is on extending product lifespans, reducing waste and decreasing the environmental impact of production.
- Digital, Data and Analytics
  This emphasises the importance of digital technologies and data analytics in optimising resource use, improving supply chains and driving innovation in the Circular Economy. It encompasses digital product design, automation, monitoring and data-driven decision-making.
- Sustainable Design and Innovation
  This focuses on innovative product design and development that considers sustainability, the right to repair and life-cycle analysis. It encompasses the creation of products with reduced environmental impact and the ability to be recycled or repurposed.
- Science, Technology and Research
  This group focuses on research and development of new technologies, scientific knowledge and emerging industries that support the transition to a Circular Economy. It encompasses interdisciplinary research, technological innovation and the commercialisation of sustainable products and processes.
- Green Energy and Low-Carbon Technologies
  Skills in this group relate to the development, implementation and maintenance of green energy technologies, such as renewable energy, electric vehicles and energy-efficient infrastructure. The focus is on reducing carbon emissions and supporting the transition to a low-carbon economy.

2. Policy, Legislation and Education:

- Circular Economy Understanding and Education
  This group focuses on promoting awareness and comprehension of Circular Economy principles, systems thinking and adopting sustainable behaviours. It includes understanding the doughnut economy, incorporating these principles into educational curricula and unlearning traditional linear models. It also involves investing in childcare and early years development to address the barriers to women's education and employment.

- Collaboration and Partnerships
  This emphasises the value of partnership, collaboration and cross-disciplinary synergy among stakeholders, government, communities and various industries. It includes working together to share resources, knowledge and best practices to drive the transition to a Circular Economy.
- Environmental Policy and Legislation
  This involves understanding and shaping environmental policies, standards and regulations to support the transition to a Circular Economy. It includes engaging with stakeholders, promoting cross-collaboration and implementing strategies for reducing environmental destruction.

3. Systems and Supply Chain Management:

- Systems Thinking and Planning
  This skills group highlights the importance of understanding and adopting systems thinking, recognising interconnections within supply chains and identifying effective points for change within the Circular Economy. It involves interdisciplinary collaboration and cross-sectoral innovation.
- Supply Chain Management
  Skills in this group relate to managing complex, sustainable supply chains, translating data into actionable decisions and handling the logistics of product life cycles. It also includes the ability to analyse and understand the environmental and social impacts of supply chains.

4. Construction, Engineering and Manufacturing:

- Engineering, Manufacturing and Technical Skills
  This covers various engineering disciplines, problem-solving abilities and technical know-how to design, manufacture and retrofit products that align with Circular Economy principles. It includes eco-product design and bioprocess engineering.
- Construction, Retrofitting and Sustainable Building Practices
  These skills include green building practices, energy-efficient design and retrofitting existing structures to minimise resource use and carbon emissions.

Just Transition:

A number of respondents commented on the need for skills to ensure a Just Transition to a Circular Economy.

- They emphasised that all contributors to the economy should be protected from negative impacts, including low-paid, part-time and precarious work in the care sector, where women are disproportionately represented.
- They also highlighted the importance of skills associated with care, community energy initiatives, green agriculture and green energy in supporting a Just Transition, as well as aligning all existing and future community-based work to government climate initiatives.

QUOTES

"The requirement for critical raw materials will continue to be essential for a growing low-carbon and renewable energy economy. However, if this is to be achieved locally, there is a significant lack of skilled workers, both now and projected into the future, who will have the geoscientific knowledge and training to be able to identify and source critical minerals... It is therefore essential that actions are taken now to address this skills imbalance to ensure the future safeguarding of our Circular Economy."

Future Delivery of the Circular Economy

Do you consider that government should play a role in assisting the transition to greater circularity through a dedicated Circular Economy delivery body?

The pie chart below shows that **79%** (67) of respondents agreed that government should play a role through a dedicated Circular Economy delivery body**.** The pie chart also shows that **7%** (6) of respondents did not believe government should play a role, with **9%** (8) stating they don't know, and **5%** (4) choosing not to answer.

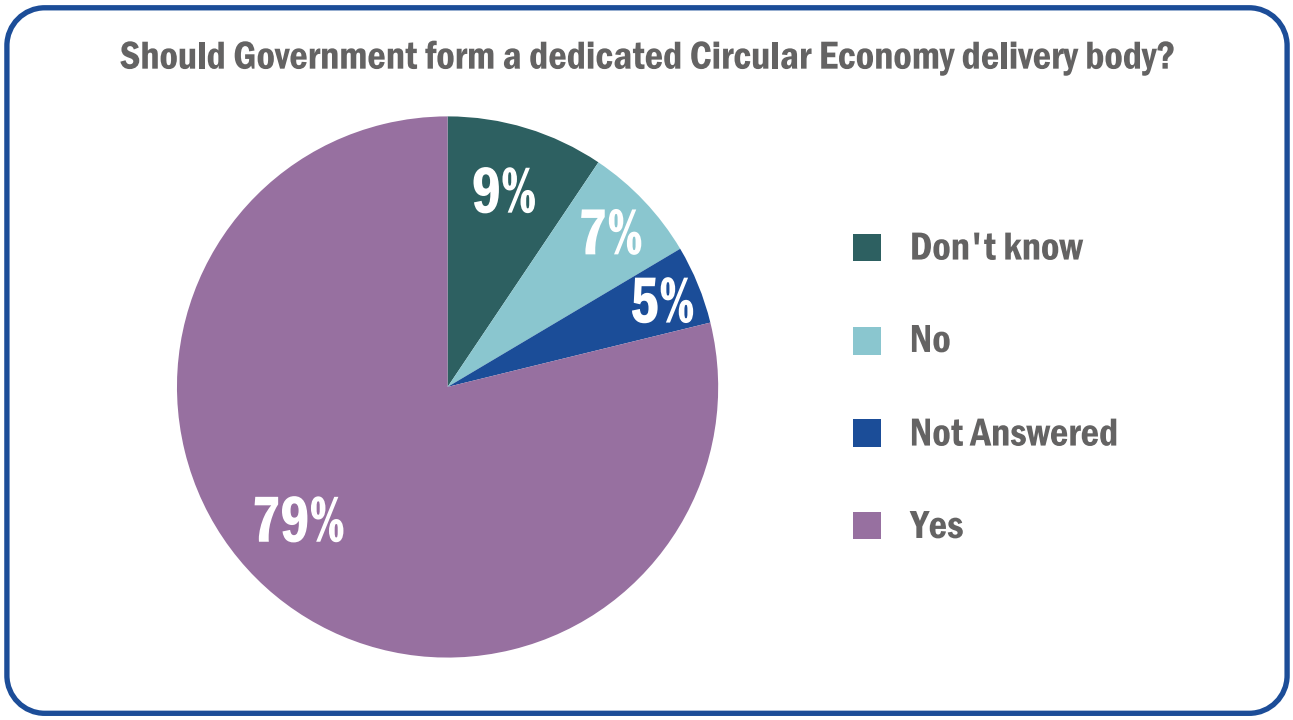


Figure 9: Role of government in supporting a dedicated Circular Economy delivery body.

What do you think a Circular Economy delivery body should look like – e.g., government-led or a public-private partnership? Please provide rationale for your answer.

Answers to this two-part question have been analysed collectively. This was a free-text field, with responses categorised into two key themes.

- Types of Delivery Body
- Characteristics of a Delivery Body

1. Types of Delivery Body

Nine types of delivery bodies were listed by respondents, as shown in the word chart below. The vast majority of responses followed the options provided in the question and said either government-led or public-private partnership. The remaining types of delivery bodies suggested can fit under the broader categories of government or jointly delivered.

Responses were evenly split between those who thought the delivery body should be government-led and those who thought it should be jointly delivered. The word chart shows the proportion of respondents who suggested each type of delivery body.

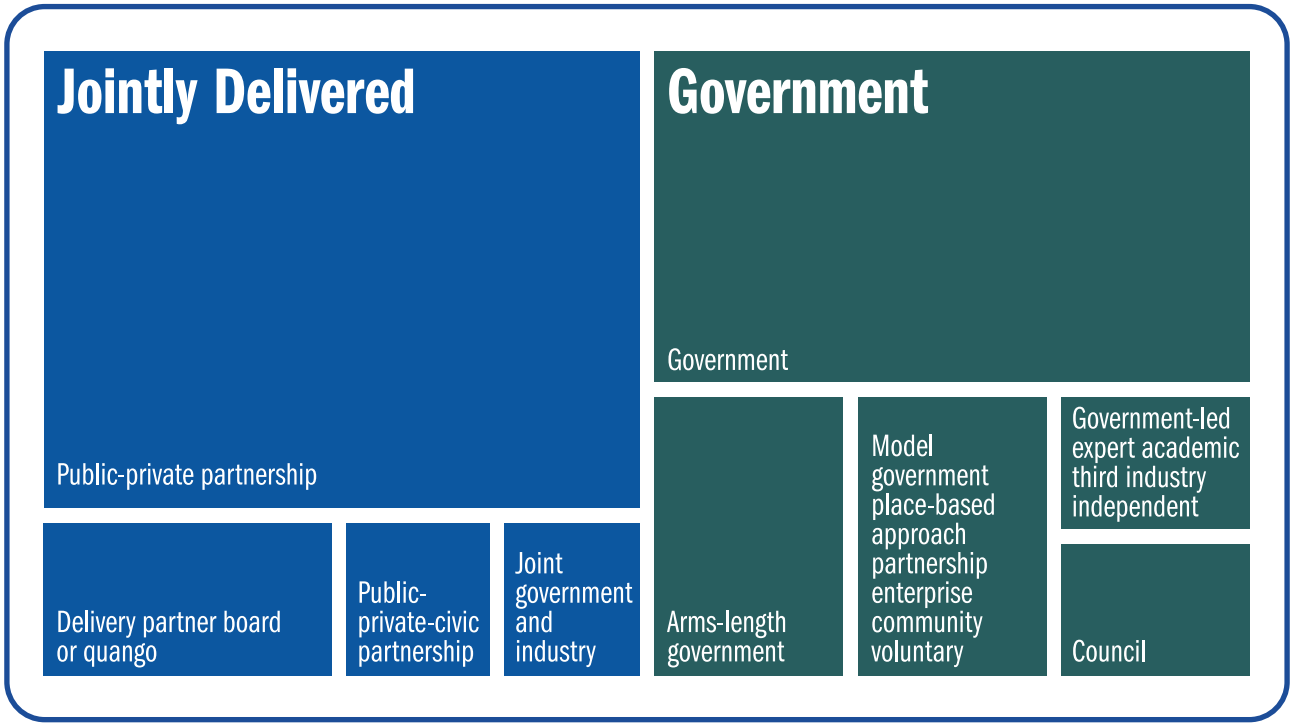


Figure 10: Proportion of support for Joint or Government led Circular Economy Delivery body.

All comments were analysed to extract the rationale for respondents' choices. Below is a summary of the ten main reasons that respondents believed that a Circular Economy delivery body should be either **government-led** or a **jointly delivered** body**.**

Government-led Delivery

1. Government oversight and authority

A government-led unit would have the necessary powers and authority to achieve ambitious objectives within the required timescales. Government can enforce compliance through legislation, financial incentives and enforcement.

2. Collaboration across sectors

Government involvement would ensure collaboration across all sectors and skill sets, bringing together the public, private and third sectors for optimal solutions.

3. Avoiding conflicts of interest

Government-led bodies can minimise conflicts of interest that may arise from private industry, whose main motivation may be profit at the expense of environmental concerns.

4. Monitoring, reporting and accountability

Government-led bodies can establish and enforce comprehensive monitoring, reporting and accountability structures, ensuring that the strategy is implemented effectively. A number of respondents said the body needed to have authority and power to hold others to account. The Office of Environmental Protection was given as a potential model to consider.

5. Cross-departmental coordination

A government-led delivery body would promote a cohesive, cross-government approach, integrating high-level strategies across central government departments and ensuring a consistent message to advance the transition to a Circular Economy.

Some advised that creating a joined-up approach should be a top priority to ensure responsibility is taken. A few also held the view that it could not sit within just one department, because it could quickly lose momentum if a Minister was not bought in. Another supported joint delivery with the Department for Agriculture Environment and Rural Affairs, but expected the delivery unit to have clear responsibilities and authority, linking into existing departments and agencies, delegating responsibility for associated delivery and action plans.

6. Expertise and funding

Government-led bodies can provide expert advice, guidance and funding to stakeholders, driving Circular Economy best practices across sectors and helping to achieve national targets and ambitions. One respondent noted that climate experts, along with extensive representation from environmental groups, equality and human rights organisations, community workers and civil society should be involved in any delivery body.

7. Building on existing networks
A government-led approach can build on existing capacities and networks, such as local authorities, to support delivery against regional targets.

8. Research and development
Government-led bodies can commission and produce progressive research that informs the strategic direction of Circular Economy policy.

9. Public visibility and branding
A government-led body can offer a more visible, trustworthy and recognisable presence to the public, driving awareness and engagement in Circular Economy initiatives.

10. Ensuring alignment with global and local strategies
A government-led body can ensure that the Circular Economy Strategy aligns with wider UN and global strategies, recognising the interdependence of nations in making effective change. Alignment on policy-making, initiatives and regulations was mentioned, especially those impacting agriculture, manufacturing, education, health, etc.

Other commentary on Responses Supporting Government-led Delivery

- Two respondents believed government should establish and lead the movement initially but would expect it would be handed over to another body in time, such as a government-owned, contractor-operated (GOCO).
- In addition to a delivery body, eight respondents advocated for a network of delivery partners to be established to support the public body.
- Two respondents advocated for a place-based approach through councils to build on existing capacities and networks.

Jointly Delivered

1. Combining resources and expertise
Government and private industry bring different perspectives, expertise and resources, making collaboration essential for a successful transition to a Circular Economy.

2. Encouraging innovation
A partnership can foster innovation by leveraging private sector expertise, investment and flexible solutions, while benefiting from government regulation and policy support.

3. Co-development of solutions
Involving all stakeholders in identifying the challenges from regulatory, operational and economic perspectives and then developing solutions collectively ensures that they meet the needs of all parties and are more likely to be effective.

4. Ensuring workable policy
The involvement of industry will ensure any decisions are practical for businesses and industries to implement.

5. Overcoming fragmentation
A coordinated approach between the public and private sectors can reduce inconsistency and fragmentation in Circular Economy initiatives.

6. Fostering collaboration
A public-private partnership encourages knowledge-sharing and collaboration among stakeholders, enabling the development of innovative circular solutions.

7. Accelerating transition
This model ensures that the necessary resources, expertise and support are available to speed up the shift towards a sustainable and resilient Circular Economy in Northern Ireland.

8. Inclusivity and fairness
A collaborative approach helps ensure that the perspectives of different constituents are considered, making the transition to a Circular Economy fair and just for all.

Two of the respondents advocated for the inclusion of education and research bodies in the delivery model, with the inclusion of civil society to ensure a collaborative, systems-wide approach is taken that is Just and fair.

9. Cross-departmental involvement
An Executive-wide body, led by both government and private sector, would help embed Just Transition principles and ensure wider Executive buy-in.

10. Supporting end-market development
A partnership between the public and private sectors can help create and sustain off-take markets crucial for scaling up the Circular Economy.

Respondents' views on government not playing a role

- The majority of respondents who disagreed did so because they did not think there was any need for a new body. They believed there are already enough quangos and it would not be resource-efficient to establish another. One respondent advocated for the rationalisation of existing partnerships, boards and quangos to improve coordination of action.

- Others disagreed with setting up a separate public body because of the associated cost and given the current financial climate, considered it counter-intuitive.
- One advocated for a delivery unit to be set up within an existing government department and another suggested the use of an appropriate existing regulator to deliver the Circular Economy.
- One response noted it would be better to pool resources together from across the four nations to develop a UK-wide approach to a Circular Economy.

2. Characteristics of a Delivery Body

The second theme provides an overview of respondents' commentary on the potential nature and role of a Circular Economy delivery body. Here is a high-level summary of those comments.

- It should be underpinned with enabling law, policy and finance.
- It should act as a one-stop shop for funding and grants and be dynamic in its branding and visibility.
- It must have oversight, authority and an ability to influence every aspect of Circular Economy delivery across departments and organisations.
- A 'circularity check' should be created that could be imposed on all new policies and programmes.
- It should have authority to set standards, processes and carry out audits of records.
- A few respondents were keen to promote the use of WRAP, for various purposes including dispersion of available funding.
- It should work in partnership with the public, charity and private sector to ensure cross-sectoral input to support community wealth building.

Other comments on Circular Economy delivery

- A few of the respondents first wanted clarification on the role, aims and functions of the delivery, as well as how it would work alongside existing bodies and plans. They recognised that one structure or body would be better suited than another, depending on the intended outcomes.
- A couple of respondents expressed frustration that government spends a lot of time preparing strategies and doing consultations but spends very little time delivering.
- One response highlighted the complexity of delivering the Circular Economy and the need to take a whole-systems approach. They recognised that while one organisation or department may take the lead, the components of resource management are spread across a number of organisations and departments, e.g., funding for innovation, collection and management of waste, infrastructure planning, trade and natural capital. These complexities and current disconnects should be acknowledged before designing a suitable governance framework to implement change and all stakeholders must have the opportunity to influence and input.

- Respondents were concerned for those sectors most likely to be impacted and interdisciplinary centres were promoted as facilitators.
- Others recommended learning from existing public private partnerships and sectors that have remodelled their business practices, including Invest Northern Ireland's Competence Centre programme and CircuIEire.
- One response suggested exploring a triple or quadruple helix model to ensure buy-in from all actors.
- Seven respondents were keen to highlight the need to involve citizens and the Citizens Assembly model was promoted as an option.
- Another advocated the use of software to enhance democratic engagement which has been trialed in Taiwan to ensure all points of view are heard, considered and responded to.

4.
Next Steps

Next Steps

The evidence gathered through the consultation process will inform the preparation of the final Circular Economy Strategy for Northern Ireland, which will be published in due course. It will also greatly inform and shape the Department's plans to create alignment between government and industry, to deliver a system-wide transition that will facilitate sustainable growth.

The DfE Circular Economy team would like to take this opportunity to offer our sincere appreciation to the many stakeholders from across the public, private and voluntary sectors, and the general public, who contributed their views and expertise to our consultation process. Your contributions will support and shape our transition to greater circularity in Northern Ireland.

Glossary

Glossary

CEFNI: Construction Employers Federation of Northern Ireland

DAERA: Department of Agriculture, Environment and Rural Affairs

DfE: Department for the Economy

DRS: Deposit Return Scheme

Doughnut economy: a visual framework for sustainable development. The name derives from the shape of the diagram – namely, a disc with a hole in the middle. The centre hole depicts the proportion of people who lack access to life's essentials (healthcare, education, equity and so on), while the outer represents the ecological ceilings (planetary boundaries) that life depends on.

Extended Producer Responsibility (EPR): a strategy to add all of the estimated environmental costs associated with a product throughout the product life-cycle to the market price of that product.

FSB: Federation of Small Businesses

Modularity: the degree to which a system's components may be separated and recombined to improve flexibility or longevity in use.

Off-take market: an offtake agreement is an arrangement between a producer and a buyer to purchase or sell portions of the producer's upcoming goods. It is normally negotiated before the construction of a factory or facility to secure a market and revenue stream for its future output.

NIRN: Northern Ireland Resources Network

WEEE: Waste, Electrical and Electronic Equipment [recycling]

WRAP: Waste and Resources Action Programme