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To: circulareconomy
Cc: Sophie Reynolds; Geraldine Brennan; David McCormack
Subject: CIRCULÉIRE's All of Government CE Strategy (AGCES) Consultation Submission
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Importance: High

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To Whom It May Concern,

Please find attached CIRCULÉIRE's submission to the "Public Consultation on the Proposed Publication of the Circular Economy Strategy" + 8 x Industry Circular Economy Best Practice Case Studies.

Sincerely

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Public Consultation: All of Government Circular Economy Strategy (AGCES)

*Submitted to DECC
on behalf of
CIRCULÉIRE Network Members
by Irish Manufacturing Research*

*V03.0
11/06/2021*

Acknowledgements: CIRCULÉIRE Network & Wider Ecosystem

This submission has been prepared on behalf of CIRCULÉIRE - the National Platform for Circular Manufacturing in Ireland. CIRCULÉIRE is the first national, cross-sectoral industry-led innovation network dedicated to accelerating the net-zero carbon circular economy in Ireland.

This submission builds on input from our industry members at a policy townhall, and a survey that has been circulated to both network members and the wider ecosystem.

The responses outlined below detail our members' views on the opportunities and barriers (as related to the Circular Economy draft Strategy) about the role Irish industry and businesses can be best supported in transitioning to a circular economy.

Irish Manufacturing Research would like to thank our Industry Network Members and wider ecosystem for contributing their valuable time and insights into this submission.

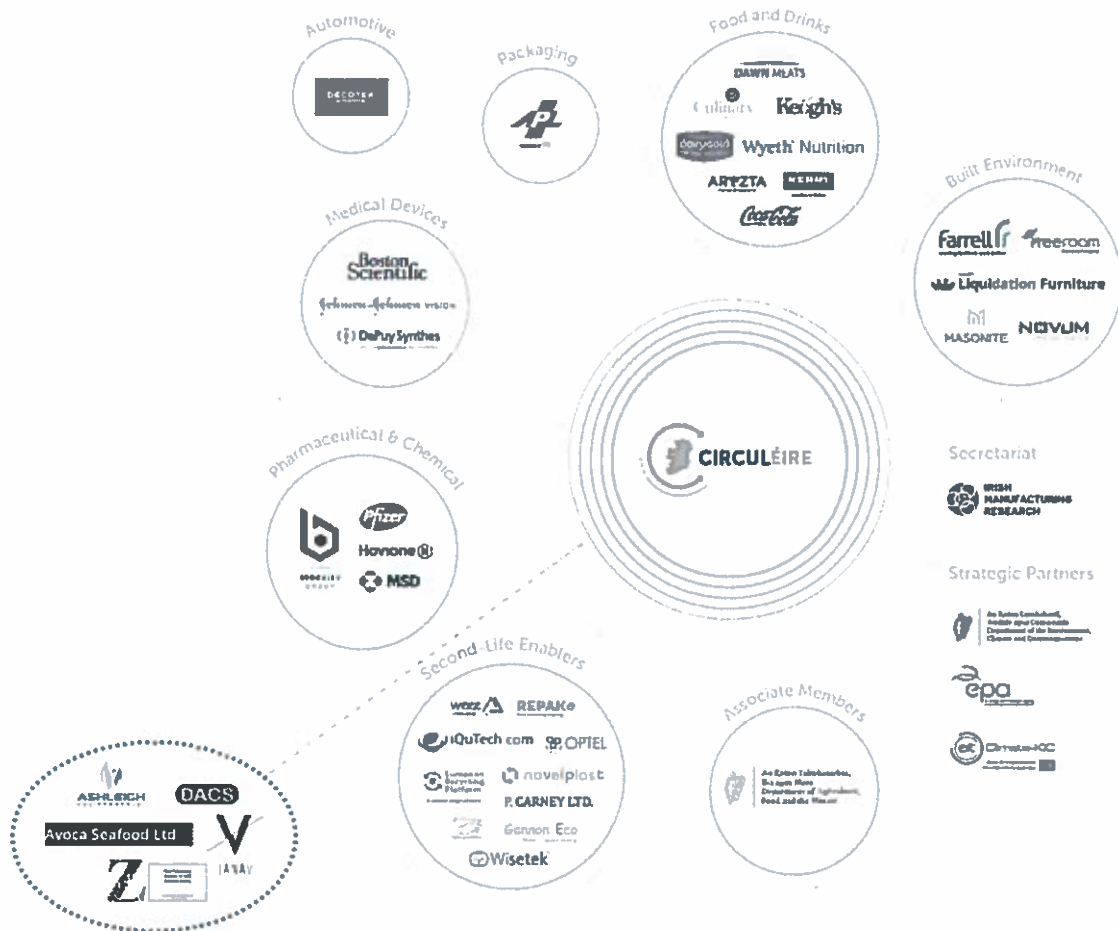


Figure 1 - CIRCULÉIRE Network (as at 11/06/2021)

Table of Contents

Acknowledgements: CIRCULÉIRE Network & Wider Ecosystem	2
Table of Contents	3
1 Overview of CIRCULÉIRE & Irish Manufacturing Research (IMR).....	5
1.1 Irish Manufacturing Research – Secretariat of CIRCULÉIRE	5
2 Response to Key Consultation Questions.....	6
Q.1 Do you agree with the draft Strategy’s proposed key objectives? In your view, are there further or alternative objectives that should be included?.....	6
1.1. Netherlands – Green Deal programme	7
1.2. Slovenia – from Circular Economy Laggard to Leaders	8
Q.2 Do you agree with the overall level of ambition set out in the draft Strategy? If not, is further ambition needed or is the draft Strategy overly ambitious?.....	9
2.1 Mainstreaming CE in Key National Policies	9
2.2. Embedding circularity in Ireland’s Industrial Policy & taking a cross-sectoral approach	9
2.3. Clear Circular Economy Targets – Aligned across Government Plans & Policies.....	10
Q.3 Should Ireland measure its progress in achieving a more circular economy relative to its European Union peers? If not, what alternative benchmark should Ireland adopt and why?	10
Q 4 Would you rate Irish public awareness of the circular economy as high, medium or low? And how important do you think raising public awareness is to further developing the circular economy?	11
Q5 What are the most effective awareness raising measures that could be taken under the Strategy?	11
Q6 Are you satisfied with the proposed stakeholder engagement arrangements in the draft Strategy? Which additional stakeholders (if any), not already part of the Waste Action Group, do you think should be included in the Strategy’s implementation?	11
Q7 What do you see as the major economic and/or social co-benefits of moving towards a more circular economy in Ireland, so that environmental improvements also provide economic and social opportunities, and vice versa?.....	12
Q8 What do you see as the major regulatory barriers to the further development of the circular economy in Ireland? In answering this question please feel free to address economy-wide issues or those affecting your sector in particular.	13
8.1 End-of-Waste	13
8.2. Chemicals & the Non-toxic Environment regulations	13
8.3. Regulation of Industry & Waste Management Activities.....	13
8.4. All-Island Approach to Scale Circularity.....	14

Q9 What do you see as the major non-regulatory barriers to the further development of the circular economy in Ireland? In answering this question please feel free to address economy-wide issues or those affecting your sector in particular.15

9.1 Access to finance: Tackling the Circular Economy Funding Gap15

9.2. Capacity-building requirements & simplifying the circular economy support ecosystem15

Q10. How important do you consider Green Public Procurement is in supporting the development of new circular goods and services?16

Q11. What would be the most effective action Government could take to promote/support and incentivise the further development of the circular economy?18

Q12. Which sectors do you think can make the biggest contribution to making Ireland’s economy more circular?21

Q13. Do you broadly agree with the policy areas listed for future development in the draft Strategy? If not, which areas would you remove/add to the list?22

Q14. Any other comments?22

Appendix: Overview of CIRCULÉIRE Network Members Circular Economy Best Practice Case Studies Submitted with AGCES Consultation Response.....23

1 Overview of CIRCULÉIRE & Irish Manufacturing Research (IMR)

CIRCULÉIRE is a public-private partnership co-created by Irish Manufacturing Research (Secretariat), an Enterprise Ireland and IDA Ireland supported Technology Centre, and three Strategic Partners the Department of the Environment, Climate and Communications (DECC), the Environmental Protection Agency (EPA), and EIT Climate-KIC with a growing network of cross-sectoral Industry Members. CIRCULÉIRE is also Ireland's 1st designated EU circular hotspot – the circular hotspot network is led by Holland Circular Hotspot.

- CIRCULÉIRE is a cross-sectoral industry-led innovation network dedicated to accelerating the net-zero carbon circular economy in Ireland - starting with manufacturers and their supply chains as a role model.
- CIRCULÉIRE is the first major Irish (public-private) systems innovation initiative for circularity and addresses the circularity knowledge, capacity building and implementation gaps or “circular innovation gap” in Ireland.
- CIRCULÉIRE is engaging actors from across the Irish circular-bio economy innovation ecosystem (government; MNCs; SMEs, solution providers, academia, NGOs, social enterprise and third sector actors).
- CIRCULÉIRE's overarching objective between 2020-2022 is to source, test, finance, and scale, circular manufacturing systems, supply chains and circular business models to deliver significant reductions in both CO2 emissions and waste over the lifespan of the programme.

1.1 Irish Manufacturing Research – Secretariat of CIRCULÉIRE

Irish Manufacturing Research (IMR) is an independent Research Organisation funded by the Irish Government (through Enterprise Ireland and IDA Ireland) to help position Ireland as a leader in advanced manufacturing.

Established in 2014 incorporating the previous industrial networks ICMR and i2e2, IMR's purpose is to improve the competitiveness and sustainability of Irish manufacturers by de-mystifying, de-risking and delivering innovative technologies, processes, and concepts through a collaborative approach. IMR's wide array of expertise includes – sustainability, circular economy, energy and water efficiency, data analytics, internet of things, industry 4.0, design for manufacturing and robotics - enabling us to manage and execute innovative cross-disciplinary and cross-sectoral applied research.

IMR's Sustainable Manufacturing thematic area is committed to de-mystifying, de-risking and delivering emerging technologies and concepts to accelerate Irish manufacturers and their supply-chains transition to a net zero carbon circular economy by innovating across the materials, energy and water nexus and is leading the delivery of CIRCULÉIRE.

2 Response to Key Consultation Questions

Q.1 Do you agree with the draft Strategy's proposed key objectives? In your view, are there further or alternative objectives that should be included?

CIRCULÉIRE broadly welcomes the overall focus of the Strategy's proposed objectives which are stated as follows:

1. *To provide a national policy framework for Ireland's transition to a circular economy;*
2. *To support and implement measures that significantly reduce Ireland's circularity gap, in both absolute terms and in comparison with other EU Member States, so that Ireland's rate is above the EU average by 2030;*
3. *To raise awareness amongst households, business and individuals about the circular economy and how it can improve their lives;*
4. *To support and promote increased investment in the circular economy in Ireland with a view to delivering sustainable, regionally balanced economic growth and employment*
5. *To identify and address the economic, regulatory, and social barriers to Ireland's transition to a more circular economy.*

However, as of 2016 Ireland was ranked as having the third lowest circularity rate (c.1.7%) of EU Member states in 2016 (average is c.11.7%). If Ireland is to turn this around and capitalise on the so-called 'circular innovation gap' – even more must be done to support and create greater incentives to support Irish industry in their transition towards a zero-carbon circular economy.

For this reason, CIRCULÉIRE would like to see the objective for Irish industry and businesses to be a European if not Global leader of industry-led circular innovation. Not only is this objective entirely aligned with the overall goals of the Strategy, but supporting Irish industry to become trailblazers in circular economy will unlock far reaching triple-bottom line impacts:

- *Environmentally: Material and GHG savings*
- *Socially: Significant jobs and regional growth*
- *Economically: Economic opportunity*

In support of this goal, effective policies are recognised as playing a key role to help accelerate and scale up circular actions in the economy. These policies, some of which have already been implemented by national government circular economy policy pioneers, support businesses in overcoming hurdles by stimulating innovative projects and long-term investments in circularity, facilitating collaboration and partnerships, and producing tangible results.

Some key examples which have been implemented elsewhere and which demonstrate the necessary focus given to industry-led circular innovation include The Netherlands & Slovenia.

1.1. Netherlands – Green Deal programme

One such example is the Dutch ‘Green Deal’ programme approach. A ‘Green Deal’ is defined as a mutual agreement or covenant under private law between a coalition of companies, civil society organizations and local and regional government, and typically run for a period of 2-3 years (at which point they are reviewed, and a decision is made about whether to continue or stop the initiative) (Ellen MacArthur Foundation, 2021)

The programme, first launched in 2011, is a joint initiative of the Dutch Ministries of Economic Affairs, Infrastructure and the Environment, and the Interior and Kingdom Relations, with a board comprised of businesses, non-governmental organisations (NGOs) and government (*ibid.*)

Green Deals cover nine themes: energy, the bio-based economy, mobility, water, food, biodiversity, resources, construction and the climate. They have been used as a mechanism to address many of the non-financial barriers that tend to thwart the entry of innovative green and circular products and services by businesses and other organisations to the market. Using this approach, central government plays a responsive, brokering role, aimed at convening relevant market actors with key cross-sectoral players that are asking for help to realise green growth. The Dutch Government uses the Green Deal mechanism to remove these non-financial barriers, by identifying and removing unhelpful legislation or regulations, supporting innovative projects, and providing access to networks (etc.).

Specific examples of successful past Green Deals include:

- **The Direct Current (DC) Green Deal:** This is a simpler, more efficient electricity system than standard AC electricity networks. Most Electric Vehicles are DC-powered, meaning most AC-networks expend a lot of energy to convert AC-to-DC. Another benefit of the DC electricity network is that saves on raw materials. (More here: <https://youtu.be/h1XUUYNvw3g>)
- **The Green roofs. New life on roofs Green Deal.** This Green deal involved engaging with forty different stakeholders around the introduction of vegetated roofs in cities. There are multiple ecosystem-enhancing benefits of these roofs, including that they catch fine dust, retain rainwater, regulate the building temperature, cool the city, and contribute to a more liveable city for humans and animals (including birds, butterflies, bees and other urban animal species). The focus of this Green Deal was that the stakeholders involved wanted to stimulate more of these green roofs through new policy; to explore their potential to create new revenue models and to undertake research about how different types of roofs can improve urban biodiversity. (More here – in Dutch: [Green-Deal-folder-nov-2015.pdf](#) (greendeals.nl)) - <https://www.greendeals.nl/sites/default/files/folders/Green-Deal-folder-nov-2015.pdf>

A key success factor of the Green Deal approach is its quadruple-helix collaboration model (between Government, Industry, Academia and Society), and “solving problems together” is stated as being the programme’s strongest value. This stems from the recognition that if the Government is to facilitate the goal of supporting sustainable economic models that support economic development while advancing environmental improvements, it ‘needs the creativity,

knowledge and skills of groups of citizens, companies, local authorities and other organizations. Precisely because of that collaboration there are many opportunities to be sustainable, green economy.’ (Cited here – translated from Dutch: [Green-Deal-folder-nov-2015.pdf \(greendeals.nl\)](#))

The programme can be adapted to pursue different sustainable and circular economic opportunities, including energy saving techniques, efficient water use, sustainable transport, alternative construction materials or resistant production systems in agriculture). In the period between 2011 and 2014, 176 Green Deals were closed in the Netherlands, involving a total of 1,090 participants.

1.2. Slovenia – from Circular Economy Laggard to Leaders

Where Netherlands is often recognised as a blazing a trail, Slovenia might be historically deemed more of a ‘laggard’ when it comes to transitioning to a circular economy (See more: [Revealed: leaders and laggards of EU waste policy - EEB - The European Environmental Bureau](#))

However, Slovenia offers an interesting example of how national governments can leapfrog ahead in addressing climate action by embracing an ambitious cross-government approach to achieving circularity. In November 2019, the Slovenian Parliament passed a proposal to **become a fully circular economy by 2030 - making circularity one of the country’s key strategic development priorities**. Between 2019 and 2022, in partnership with EIT Climate-KIC, Slovenian authorities and stakeholders will roll out a **deep demonstration of rapid change** decarbonizing Slovenia’s socio-economic system by embedding circularity.

Slovenia’s National Circular Economy Transition programme consist of three key pillars: **1) Smart and circular communities; 2) Circular green development; and 3) Circular policy design and science**. The programme focuses on five key sectors and value chains namely: **built environment, food, forestry, manufacturing, and mobility**.

This programme builds on Slovenia’s 2014 Partnership Agreement with the European Commission (EC/Gov. of Slovenia, 2014) whereby Slovenia outlined their intent to transition to a circular economy and demonstrate the country’s alignment with the EU’s then-Strategy for Smart Sustainable and Inclusive Growth. See more information [here](#).

The Dutch and Slovenian offer two interesting examples of how Governments can play a key role in ensuring measures support inclusive and sustainable economic development. The Green Deals programme (NL) sits as a supplement alongside other policymaking instruments, such as legislation and regulation, market and financial incentives, and measures to stimulate innovation. The Slovenian example demonstrates the value of making circular economy an integrated, cross-cutting priority of national development planning, and does so in a way that strategically aligns national and EU-level priorities.

Q.2 Do you agree with the overall level of ambition set out in the draft Strategy? If not, is further ambition needed or is the draft Strategy overly ambitious?

In addition to our recommendation to emphasize an industry-led approach to scaling circular innovation in Ireland's transition in the All of Government's Circular Economy Strategy, as outlined in our response to Q1 above, we also recommend that the following be incorporated in the strategy to further its ambition: 1) Mainstreaming of CE in national policies; 2) Embedding circularity in Ireland's Industrial Policy; 3) Clear Circular Economy Targets which are Aligned across Government Plans & Policies.

2.1 Mainstreaming CE in Key National Policies

For Ireland to become a global leader in the circular economy and bioeconomy – the ambition outlined in *Future Jobs Ireland (2019)* – the circular economy needs to become an explicit national strategic development priority. Accelerating the adoption of circularity in Ireland across all sectors will require a clear long-term policy direction and policy innovation across All of Government.

CIRCULÉIRE welcomes the development of the All of Government Circular Economy Strategy but contends that delivering a consistent policy direction for industry requires making circularity central to the Recovery Fund, the National Economic Plan, and the National Development Plan.

2.2. Embedding circularity in Ireland's Industrial Policy & taking a cross-sectoral approach

CIRCULÉIRE welcomes the development of sectoral roadmaps with clear targets related to both increasing circular material re-use but also re-use, repair and remanufacturing. However, we would stress the importance of embedding circularity in industrial policy more generally and ensuring that sectoral roadmaps do not preclude consideration of cross-sectoral opportunities

For example, CIRCULÉIRE's 2020 Thematic Working Group on Industrial Symbiosis, delivered in collaboration with International Synergies (see summary report [here](#)), stressed that industrial symbiosis opportunities are cross-sectoral in nature, demanding market gaps are filled through the creation of novel supply-chains.

Moreover, much like the centrality of the Circular Economy in the [EU's Industrial Strategy \(2020\)](#), the Government needs to embed circular economy in all key industrial policies. It seems a missed opportunity that the recently published [Ireland's Industry 4.0 Strategy 2020-2025](#) – does not mention the circular economy despite digitisation and Industry 4.0 being a key enabler of circularity.

2.3. Clear Circular Economy Targets – Aligned across Government Plans & Policies

CIRCULÉIRE welcomes the All of Government approach and commitment to introducing targets around resource efficiency in framing the Government’s Draft Circular Economy Strategy. The urgency to scale up action has never been greater. We have a narrowing window of just over a decade (by 2030) to implement radical reductions (45-50%) in global greenhouse gas emissions to stay below 1.5°C and circular practices and business models can address the 45% of emissions associated with products.

However, further clarity is recommended regarding how the strategy will support or build on the measures in the WAPCE and/or align with other plans and programmes. For example, targets are referred to in the National Waste Management Plan for a Circular Economy (NWMPCE), the EPA Circular Economy Programme (CEP) and this All of Government Circular Economy Strategy (AGCES) and the accountability or interaction between these is unclear. We would welcome the first AGCES including more concrete actions and timeframes that demonstrate commitment and underpin the ambition shown.

Clarity is recommended related to how targets proposed in various Government plans and policies will be implemented and how they will align. For example, ensuring alignment and consistency between:

- the Regional Waste Authorities, with targets for reuse, repair, resource consumption and reduction of contamination levels in the upcoming NWMPCE (as flagged in the WAPCE).
- the Department, with material circular use rate targets and priority waste prevention targets in Circular Economy Sectoral Roadmaps in the AGCES
- the EPA, with quantitative targets that will integrate with monitoring frameworks being developed to capture and report circularity, and support Circular Economy Package reporting requirements in their CEP.

Moreover, while the EU’s Circular Material Re-Use rate is an important macro indicator it relates solely to material throughput and is important to also clarify targets related to extending product life through re-use, repair and remanufacturing, supporting waste prevention, valorisation and resource productivity.

Q.3 Should Ireland measure its progress in achieving a more circular economy relative to its European Union peers? If not, what alternative benchmark should Ireland adopt and why?

CIRCULÉIRE welcomes the proposed use of Eurostat’s circularity rate measure as a benchmark through which to assess our progress given it is in absolute rather than comparative terms – noting however that circular economy refers to more than just increased recycling and circularity at a material level. A more circular Irish economy requires integration with EU circular development and harmonised methodologies for circular metrics and progress reporting will be needed. However, the Irish strategy and associated ambition will need to consider Ireland’s unique context and challenges as an island which has a high reliance on imports in certain sectors.

Progress measurement should be tangible and based on high quality data sets. National data must be available to all stakeholders in a reasonable timeline to support planning. CIRCULÉIRE also supports the development of individual set of targets (developed in collaboration with relevant stakeholders from each sector as early as feasible) for each sectoral roadmap.

Q 4 Would you rate Irish public awareness of the circular economy as high, medium or low? And how important do you think raising public awareness is to further developing the circular economy?

CIRCULÉIRE's members perceive Irish public awareness level of the circular economy tends to be quite low. It is extremely important to raise public awareness as consumers and businesses are the backbone of the transition to a more circular economy and are key to creating a market for more circular goods and services.

Q5 What are the most effective awareness raising measures that could be taken under the Strategy?

CIRCULÉIRE's members contend that Irish businesses and the general public need to be given accessible and simple information related to how to transition their business models and purchasing habits towards more circular outcomes (see [CIRCULÉIRE's Open Access Knowledge Library](#) as an example of curating best practice and making it accessible to industry).

Moreover in terms of awareness raising activities – facilitating dialogue within sectors to develop understanding of what the circular economy means for different sectors in the Irish economy is key to circular capacity building and learning (see for e.g. our recent [Circularity in Construction Webinar with Holland Circular Hotspot](#) – which while directed to a particular sector was open to interested members of the public).

Q6 Are you satisfied with the proposed stakeholder engagement arrangements in the draft Strategy? Which additional stakeholders (if any), not already part of the Waste Action Group, do you think should be included in the Strategy's implementation?

IMR as the secretariate of CIRCULÉIRE, engaged with DECC and other stakeholders during the Waste Action Group meetings of 2020 and commends DECC for the arrangements and the many opportunities given to provide additional feedback and submissions during the ideation development for the Waste Action Plan Policy.

CIRCULÉIRE welcomes the development of the Circular Economy Advisory Group but also recommends an enhanced recruitment effort (e.g. significant forewarning of meetings/proposed topics by quarter, calls for specific sector to participant) to encourage greater direct industry engagement from manufacturers, producers, retailers and second-life enablers. Advance calls to specific stakeholders/sectors to participate in particular dialogues may overcome perceived barriers regarding time commitment required to engage in all advisory group meetings.

In addition, CIRCULÉIRE envisions a potential opportunity for the Circular Economy Advisory Group to be used to generate key topic areas around which deeper voluntary “green deals” could be established (akin to the Dutch ‘Green Deal’ model outlined in 2.1 above) to form multi-stakeholder coalitions to work with Government to accelerate the trajectory to overcoming the key barriers (actual and perceived) to scaling circular economy.

Q7 What do you see as the major economic and/or social co-benefits of moving towards a more circular economy in Ireland, so that environmental improvements also provide economic and social opportunities, and vice versa?

Increasing the circulation of materials, components, and products within the Irish economy represents an estimated €2.32bn annual opportunity (Coakley et al. 2013). There are many economic and/or social co-benefits of moving towards a more circular economy in Ireland, including:

- Scaling circular economy implementation can increase Ireland’s competitive advantage and resilience to external supply-chain shocks - keeping resources on the island (addresses the proximity principle) and within Europe creating added value from higher quality environmental management of waste and contributing to a reduction in resource extraction, waste and related pollution.
- Valorising waste creates the opportunity for import substitution and reinforces the economic benefits of regional supply-chains to Irish companies – through more localised job creation.
- New business models and opportunities arising from circular innovation in the supply of goods and services will require new and expansion of existing services to facilitate the repair, refurbishment, remanufacturing and preparation for reuse activities over multiple use-cycles and will entail upskilling and capacity building for key trades.
- Training and up-skilling opportunities, such as the CIRCULÉIRE funded WEEE Ireland-led Skillset for A Circular Economy White Goods repair training programme.
- Marketing of Ireland as a testbed for CE innovation and pilot programme testing to attract new business and investment as well as increased R&D opportunities.

Q8 What do you see as the major regulatory barriers to the further development of the circular economy in Ireland? In answering this question please feel free to address economy-wide issues or those affecting your sector in particular.

Based on CIRCULEIRE's engagement with our Industry Members during a virtual Town Hall meeting and an additional survey that was circulated online, the following regulatory barriers have been identified:

8.1 End-of-Waste

End-of-Waste regulations have been reported by several Industry members as being a particularly challenging regulatory barrier to transitioning to a circular economy. For some, it is not clear that the current regulations are leading to systems-level change and thus could be more outcomes-focussed regarding their circular economy objectives. Moreover, several members have acknowledged that the process of engaging with End-of-Waste regulations is cumbersome, and more direct technical assistance (e.g. a 'Help Desk') from the EPA is sought.

Moreover, some members reported that the time take to get an item to no longer be classified as waste takes too long. In particular, members in the material processing sector highlighted that the regulatory steps to go through for an Article 27 has been referred to as "unrealistic" and in need of being simplified. IMR has heard direct accounts from Irish Industry players who have gone to great lengths to work around the perceived challenges associated with End of Waste regulations in Ireland. One Irish-based MNC, for instance, exports plastic waste recovered in Ireland to the Netherlands to have it processed and granulated, and then imports this plastic recyclate – as this is as an easier work around our domestic End of Waste regime.

Increasingly, as Irish industry looks to exploit the commercial opportunities associated with the circular economy, valorisation of waste, and reclassification of waste into by-products, will feature prominently. The Government will need to increase the budget and resourcing dedicated to End of Waste technical assistance and processing if it is to keep pace with this growing demand. Doing so will help ensure that industry is given adequate technical assistance and that processing times for these requests are improved. Moreover, targets regarding End-of-Waste processing time should be set (for e.g. that all requests shall be processed in a 12-16 week time period or the like).

8.2. Chemicals & the Non-toxic Environment regulations

Some industry representatives engaged with for this submission have suggested that beyond the EU's Regulation on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), more could be done to phase out raw materials. Others have reported that the current regulatory regime is "not strict enough in terms of limiting use of toxic chemicals" by manufacturers.

8.3. Regulation of Industry & Waste Management Activities

Introduce Anticipatory Regulations: Significant compliance burden exists, particularly for SMEs, which makes it challenging to go beyond compliance and embrace a circular economy model.

8.4. All-Island Approach to Scale Circularity

- Actors from the wider ecosystem who engaged in CIRCULÉIRE’s consultation survey highlighted the need for all-island approach to be taken to scale circularity – particularly in terms of aligning regulatory requirements between ROI and NI for industry operating in both jurisdictions – particularly in relation to EoW obligations.
- It was noted that there is a perceived need for greater dialogue between the likes of EPA and the Northern Ireland Environment Agency (NIEA).

Mini Case Study #1: Supporting the introduction of new business models in Denmark (WEF, 2020)

“To help businesses ease their way through the regulatory landscape and bring their ideas to market quickly, the Danish Business Authority introduced a one-stop shop for new business models. The service coordinates answers to innovators’ questions about regulation across ministries. Businesses submit their queries through a single portal, hosted by the Danish Business Authority. The service is free of charge and has helped solve problems faced by businesses trying new things in the fields of e-commerce, the sharing economy, data and technology and the circular economy. Businesses may also raise concerns about potential regulatory barriers to new ideas, products or business models. The Danish Business Authority works with other ministries to investigate whether it is possible to change rules or the implementation or interpretation of the law, without undermining its objectives. It reviews how regulations are designed in neighbouring countries to identify alternative solutions.”

Mini Case Study #2: Inspiration and Insights from the UK’s “Cut the Red Challenge”

The Government could also draw on the UK Government’s ‘Cut the Red Challenge’ (2011 – 2014) to crowdsource ideas for how End-of-Waste and Regulations related to Industry and Waste Management can be optimised to support Industry’s transition to a circular economy.

Q9 What do you see as the major non-regulatory barriers to the further development of the circular economy in Ireland? In answering this question please feel free to address economy-wide issues or those affecting your sector in particular.

9.1 Access to finance: Tackling the Circular Economy Funding Gap

Echoing our submission to the Waste Action Plan Consultation in 2020, CIRCULÉIRE's internal consultation and survey of network members and the wider ecosystem access to finance as a significant cross-sectoral barrier to developing the circular economy in Ireland.

This includes SMEs finding it difficult to access finance for day-to-day activities linked to circular economy initiatives to more significant funding requirements linked to developing Ireland's circular economy infrastructure, e.g. for anaerobic digestors or chemical recycling plants, which require huge capital investment in plant upgrades and equipment.

While funds like EPA Green Enterprise Fund, Enterprise Ireland's Disruptive Technology Innovation Fund offer grant funding to circular economy entrepreneurs from between 50,000.00 – 1,500,000.00, this does not cover the level of capital expenditure costs required for bigger circular economy projects.

If granted the status of implementing partner for InvestEU, the Strategic Banking Corporation of Ireland should look at how sustainable infrastructure can be made a core investment priority for Irish companies and SMEs.

Moreover, the Government should look to initiate a 1Billion Euro Capital Expenditure Fund for Circular Economy projects to support Circular Infrastructure projects seen to be particular strategic importance to achieving Ireland's national circular economy objectives.

9.2. Capacity-building requirements & simplifying the circular economy support ecosystem

- Lack of understanding, training and skills, in particular in SME sector
- CIRCULÉIRE SME members, welcomed the 2021 Circular Economy Innovation Grant Scheme (CEIGS) but highlighted that advanced notice of such calls for applications would support greater uptake given that 6 weeks from announcement to submission deadline was perceived as a limited time to scope a competitive submission. In addition, members would welcome grants which fund visits to other countries (COVID-19 permitting) to see how circular strategies and business models are implemented.

Q10. How important do you consider Green Public Procurement is in supporting the development of new circular goods and services?

“Next year the Public Capital Programme will be at a record level at over €10 billion; the commercial semi-state sector will procure at least €8 billion; and Ireland’s 3,000+ contracting authorities will tender for some €15 billion+ in supplies and services. Ireland’s procurement market has grown to €33 billion. Wow. Busy times ahead for buyers and suppliers” (Peter Brennan, 2020)

Building on CIRCULÉIRE’s 2020 Circular Procurement Thematic Working Group delivered in collaboration with IDDEA (see summary report [here](#)), CIRCULÉIRE’s members recognise that Green Public Procurement (GPP) can and should play a strategic role in developing new circular good and services because of the combined buying power of the public sector.

Given the size of the public procurement sector (*illustrated by Peter Brennan’s quote included above*) we recommend that all government procurements should include waste hierarchy principles including remanufacturing, reuse, repair, preparation for reuse as well as end of life management recycling and recovery – particularly for high-value contracting and capital investment projects associated with Project 2040 development plans.

A key recommendation from CIRCULÉIRE’s 2020 Circular Procurement Thematic Working Group is the development of 5 year roadmap for the OGP which includes mandatory targets to ensure circular procurement best practice is incorporated into public buying. We contend that embedding circularity in public procurement practice will not only drive a better market for these aspects in the Producer sector but will also help regulators and authorities better understand the challenges in circular economy development e.g. warranties, insurances etc. and support problem solving in these areas.

Some inspiring examples which draw on the power of public procurement, or involvement of public agencies in circular procurement include:

- An NL Green Deal has been used to advance [Circular Procurement 2.0 - from pilot to upscaling | Green deals](#)
- **Circular Public Procurement** – see [CircularPP](#) *“In the period 2017 – 2020 the Circular PP project has worked on promoting circular public procurement in the Baltic Sea area by doing pilots, research and capacity building events.”*
- **Challenge-based procurement: Startup in Residence, Amsterdam (SIR)** offers an innovative public procurement method which can be easily applied to develop new circular goods and services. SIR is an incubation programme which brings together innovative startups and the City of Amsterdam (government) by inviting startups to provide solutions for public sector challenges while applying to a European tender. It offers startups an extensive six-month training programme. The participating startups have the support of civil servants with regard to the content of the challenge, and of experienced entrepreneurs with regard to entrepreneurship (mentors). They are provided with the opportunity to conduct pilots, to validate and improve their products/services within this co-creation process. If the solutions are proven successful,

it is the City's intention to act as their (launching) customer at the end of the programme and to create a long-term, sustainable customer-challenge owner relationship. Past challenges have focused on sustainability, circular economy; Between 2015 - 2018, 51 challenges were formulated on themes such as sustainability, mobility, circular economy, (e.g. reusing domestic residuals; tackling food waste). healthy city, digital city and public urban space. In this period a total of 340 startups applied and 34 startups were selected and awarded participation in the incubation programme. Together with more than 70 civil servants, these startups tested their idea and prototypes, and used the results from pilot experiments to further develop their solutions. The municipality has collaborated with 16 of the 27 alumni startups in various forms of public-private partnerships (See Startup In Residence Report Engels.pdf (startupinresidence.com)).

Q11. What would be the most effective action Government could take to promote/support and incentivise the further development of the circular economy?

In response to this question, CIRCULEIRE's members and the wider industry representatives we engaged with acknowledged the following as actions which would have a major impact in promoting, supporting and incentivising their transition to circular economy:

11.1 Tackle the Capital Expenditure Funding Gap

Developing Ireland's circular economy infrastructure, e.g. for anaerobic digestors or chemical recycling plants, requires huge capital investment in plant upgrades and equipment. While funds like EPA Green Enterprise Fund, Enterprise Ireland's Disruptive Technology Innovation Fund offer grant funding to circular economy entrepreneurs from between 50,000.00 – 1,500,000.00, this does not cover the level of capital expenditure costs required for bigger circular economy projects.

If granted the status of implementing partner for InvestEU, the Strategic Banking Corporation of Ireland should look at how sustainable infrastructure can be made a core investment priority for Irish companies and SMEs. Moreover, the Government should look to initiate a 1Billion Euro Capital Expenditure Fund for Circular Economy projects.

11.2 Enforcement of current legislation and mandatory standards and limitation of free riders and unauthorised WEEE treatment.

Streamline compliance (there is currently a disproportionate burden on small producers). Ensure timely development and publication of sectoral roadmap in collaboration with WEEE stakeholders.

11.3 Create stronger fiscal incentives for circular eg. reduction in VAT for repair and other circular activities

Eurobarometer 388 – Attitudes of Europeans towards waste management and resource efficiency (available here: [Flash Eurobarometer 388: Attitudes of Europeans towards Waste Management and Resource Efficiency - Data Europa EU](#)) found that in Europe 77% of citizens would be willing to have their goods repaired seldom do so because the high cost is deemed a barrier. Aligning taxation policies with the goals of enhancing material efficiency and the circular economy, could be achieved by reducing VAT and tax for repair activities and second-hand goods.

Several EU countries have already implemented VAT reductions and tax incentives on repair services and sales of second-hand goods ([RREUSE, 2017](#)). The Swedish government, for example, has issued a 50% tax break, reducing the VAT from 25% to 12% for repairs on any items ranging from clothing to large electrical appliances.

Sweden also enables consumers to claim half the labour cost of the repair back for large electrical and electronic appliances, like refrigerators ovens or dishwashers, on their income tax ([Swedish government tax break programme for repair - Knowledge Hub | Circle Lab \(circle-lab.com\)](#)). The tax rebate is up to a maximum of 25000 Kr (approx. 2500EUR) / year or 50000 Kr (approx. 5000EUR) for persons over the age of 65 ([RREUSE, 2017](#)).

11.4 Access to data - information is key

Echoing IMR's submission to the Waste Action Plan for a Circular Economy Consultation in 2020, access to data is critical to accelerate circularity adoption. There is a need for facilitated sharing of regional and local waste / resource flow studies between stakeholders to enable the quantification and qualification of both man-made materials; bio-materials; water and energy across the island of Ireland. While various mapping exercises have been conducted they are either publicly available but unknown or known but not shared – building on existing work in this area would fast track the transition and identification of circular opportunities. See Mini Case Study #3 below which highlights how the the French Chamber of Commerce and Industry (CCI) of Haute-Garonne has supported industry uptake of industrial symbiosis.

Mini Case Study #3: ACT'IF Tool - Facilitating Secondary Raw Material Markets

The ACT'IF tool, developed by the French Chamber of Commerce and Industry (CCI) of Haute-Garonne in 2008 (and replicated across all 22 French regions) has helped facilitates secondary raw material markets through: (a) identification and quantification of secondary raw materials, (b) analysis of regional waste streams and (c) provided facilitation support. To date 3,700 companies have referenced 17,000 resource streams with > 65,000 tonnes of waste valorised and delivering €545,960 in cost savings (ACT'IF, n.d)

11.5 Packaging in the Circular Economy

Circular Packaging is one of CIRCULEIRE's 2021 Thematic Working Groups which are currently underway, and delivered in collaboration with Mabbett. Below are some preliminary insights/recommendations.

- Create a central hub or centralised information network with packaging minimisation advice for each step in the supply chain for the different industries and sectors (not just post-consumer packaging waste). This could include specific requirements and available options or solutions providers within different industries / sectors.
- Related to this, Mandatory Packaging Marking / Identifiers could help guide manufacturers to use more responsible packaging solutions that are simple to recycle. A neutral research hub is also seen to be an added value to avoid situations where businesses invest in new 'sustainable' packaging systems and end up with unintended consequences.

11.6 Continued Investment in CIRCULÉIRE 2.0

- Our members have flagged the continued funding of the CIRCULÉIRE industry-led circular innovation network (current programme runs from 2020-2022 inclusive) – with the potential to develop a longer-term programme e.g a five-year plan in conjunction with all EPR schemes – recognising that transitioning to a circular economy business model requires a longer-term perspective.

Q12. Which sectors do you think can make the biggest contribution to making Ireland's economy more circular?

Six sectors of the economy have already been identified as having significant resource productivity opportunities (McCarthy et al., 2019):

- food & beverages,
- pharmaceuticals,
- chemicals & non-metallic mineral products.
- construction,
- retail & accommodation
- and food services.

More generally, manufacturing is a significant proportion of Ireland's GDP (circa 25% in 2018) and its impact to Ireland is well above the EU average of 14.4% (University of Cambridge, 2017)). The manufacturing sector represents a valuable model for scaling the circular economy across the entire economy and underpins the strategic investment in CIRCULÉIRE – the National Platform for Circular Manufacturing. Moreover, it is important to acknowledge the key role that “Second-Life Enablers” play in enabling circularity and the transition to circular business models – be they waste management companies, material reprocessors, reverse logistics providers or product life-cycle management.

In addition, whilst noted as an area for further policy development in draft AGCES, it is worth re-instating the importance of **Agricultural sector** in contributing to making Ireland's economy more circular through Circular Bioeconomy models illustrated by CIRCULÉIRE's 2020 Circular Bioeconomy Thematic Working Group (see summary report [here](#)).

In addition, it is worth flagging that **Holland Circular Hotspot, in collaboration with the Netherlands Embassy in Dublin who commissioned the analysis, recently published (April 2021) their analysis/recommendation of the most promising sectors in the Irish economy in terms of circularity namely - Agro-food & Beverage, Offshore Wind, Construction & Demolition, Plastics, Biopharmachem, and Circular ICT (see their summary report “Circular Economy Opportunities in Ireland” [here](#)).**

Q13. Do you broadly agree with the policy areas listed for future development in the draft Strategy? If not, which areas would you remove/add to the list?

CIRCULÉIRE welcomes the policy areas outlined for future development of the draft strategy – in particular we would like to commend DECC’s emphasis on the following:

- **Circular Design** – We would also like to note that CIRCULÉIRE has a 2021 Thematic Working Groups on Circular Design kicking off in July 2021, delivered in collaboration with MCO, and are very willingly to feed any policy innovation insights from this multi-stakeholder process into the future development of this policy area in the draft AGCES.
- **Digital Services; &**
- **Circular Manufacturing** – we welcome the recognition of the interdependencies between digitalisation and circular manufacturing – given that Industry 4.0 is a key enabler of enabling circular industrial systems and supply-chains. CIRCULÉIRE welcomes these topics prioritisation given manufacturing is a significant proportion of Ireland’s GDP (circa 25% in 2018) and its impact to Ireland is well above the EU average of 14.4% (University of Cambridge, 2017)). Moreover, the manufacturing sector represents a valuable model for scaling the circular economy across the entire economy and underpins the strategic investment in CIRCULÉIRE – the National Platform for Circular Manufacturing.
- **CE business models;** we welcome the emphasis on process, product and business model design – given that the circular economy is an economic model which can not deliver on its full impact reduction potential unless it is embraced in a systemic way.

We do however note a particular policy area which seems to be missing from the draft AGCES, namely **remanufacturing** and would recommend that the further development of the AGCES consider the **development of a national remanufacturing policy**. The European Remanufacturing Network (ERN) which evolved into the Remanufacturing Council (Conseil European de Remanufacture) seeks to address the lack of cross-sectoral activities to facilitate knowledge transfer and promote the remanufacturing industry in Europe. It’s ambition is to triple the value of Europe’s remanufacturing sector to €100 billion by 2030.

Q14. Any other comments?

No additional comments.

Appendix: Overview of CIRCULÉIRE Network Members Circular Economy Best Practice Case Studies Submitted with AGCES Consultation Response

- **Ashleigh Environmental:** Advanced Microwave Treatment for Bio-Based Products
- **Freefoam:** Closed Loop Production Processes
- **Novelplast Teoranta:** Creating a Circular Economy for Polymer 'Big Bags' (B2B Packaging)
- **P Carney Limited:** Manufacturers of Secondary Aluminium Ingots
- **WEEE Ireland:** Leading the charge on lithium battery reuse solutions
- **WEEE Ireland:** White Goods Repair Skillset for a Circular Economy
- **Wisetek:** A Circular Business Model in Action
- **The ZeroNet:** Powering the Circular Economy



An Roinn Comhshaoil,
Aeirdé agus Cúrsaí Síde
Department of the Environment,
Climate and Communications



Ashleigh Environmental: Advanced Microwave Treatment for Bio-Based Products

CE Practice Summary:

- Ashleigh Environmental's Biowave™ system is a proprietary process that supercharges the conversion of underused feedstock materials such as dairy sludges, food waste and municipal biosolids to renewable energy in the form of biogas.
- Industrial application has been validated, with optimum energy efficiency and much greater processing capability compared to similar waste conversion biotechnologies. In 2021, Ashleigh Environmental will be deploying a large-scale unit on a major Irish dairy site.

Background Context

Just 16% of all 88 million tonnes of bio-waste is recycled into something useful in Europe today and this waste is responsible for a global warming potential of about 186 million tonnes of carbon dioxide equivalent (1).

To tackle this the EU has set a target by 2035 of 65% of bio-waste to be reused or recycling (2). To help meet this challenge we have developed a unique conversion technology to enhance the renewable energy potential of various underutilised bio-wastes. In Ireland this is highly relevant for the agri-food and municipal wastewater treatment sectors which together produce over 100,000 tonnes of biodegradable waste per year (3).

This waste is largely applied to agricultural land or landfill and therefore not adequately recycled into a valuable product such as renewable energy. Increasing our renewable gas potential in Ireland is a fundamental tenant of Gas Network Ireland's 2050 decarbonisation plan. Gas Networks Ireland is targeting 11TWh/annum renewable gas in the network by 2030 (20% of current demand). The volume of renewable gas and hydrogen in the gas network will increase over time to 50% by 2050 (4).

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Biowave™ – Industrial Microwave Technology

Ashleigh Environmental's Biowave™ system is a proprietary process that supercharges the conversion of underused feedstock materials such as dairy sludges, food waste and municipal biosolids to renewable energy in the form of biogas. Our patented system uses industrial microwave technology to accelerate chemical reactions, resulting in improved speed of conversion and significantly improved biogas yields in an anaerobic digestion (Biogas) facility. Furthermore, additional benefits in the diversion of a waste streams from land spreading/landfills resulting in a reduction in transport CO2 emissions and a significant saving on associated costs.

Impact to Date

The technology has been developed from experimental research in 2012 to its current industrial scale. Significant funding from EU FP7, Horizon 2020 Fast Track to Innovation and most recently the Disruptive Technologies Innovation Fund has been achieved. Industrial application has been validated, with optimum energy efficiency and much greater processing capability compared to similar waste conversion biotechnologies. This year we've demonstrated a 1.8-fold increase in biogas production from dairy processing sludge and will be deploying a large-scale unit on a major Irish dairy site in 2021.

Replication / Scalability potential

The World Biogas Association (WBA) estimates there over 130,000 small, medium and large-scale biogas plants are in operation across the globe (5). The International Energy Agency (IEA) estimates the potential for biogas production from biowastes in 2040 will be 50% higher than today. Given these two important figures, there is enormous potential for industrial application of our technology at scale throughout the world. The Biowave™ system is housed in a modular container and can integrate with new or existing biogas plants and can be designed to integrate the majority of all biogas plant sizes.

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- 2) European Environmental Agency: Bio-waste in Europe - turning challenges into opportunities 04/20
- 3) <https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/>
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Wisetek Solutions: A Circular Business Model in Action

CE Best Practice

- Wisetek Solutions provide reverse logistics and Information Technology Asset Disposition (ITAD)
- In 2019, Wisetek enabled an estimated Green House Gas Emissions reduction of 24,409,105lbs by processing 18,228,910lbs of IT/Data Centre material.

Company Background

Wisetek Solutions was founded in 2007 by Sean Sheehan. Sean was previously employed by EMC in its Cork facility. The initial focus of the Wisetek business was to provide reverse logistics services to companies such as EMC which of course became one with DELL in 2015. The services involved recovering used IT equipment from the customer installed base and processing it. Linear economy thinking was still the norm at that time but Wisetek quickly showed that a significant percentage of this equipment could be tested, refurbished and re-used in both existing and secondary market supply chains. This became the modus operandi of Wisetek.

Since that time the company has immersed itself more deeply into both reverse logistics and Information Technology Asset Disposition (ITAD) as the circular economy (CE) gathers momentum around the globe. Today, the company employs 450 people worldwide and has wholly owned operating facilities in Ireland, USA, UK, Thailand, and a partner network covering 145 countries.

Circular Business Model in Action

Global IT equipment primary sales was of the order of \$3.5trillion in 2020. The primary life cycle of IT equipment, for large companies is between 3 and 5 years depending on the industry sector. This is sometimes referred to as the refresh cycle. In a purely linear economy this would represent an enormous loss but thankfully this is not the case anymore. Both the ITAD and reverse logistics business are now well serviced with CE thinking and companies such as Wisetek provide CE services to take back the equipment and find ways to extend its useful life cycle through re-use in one form or another.

In Wisetek's case it is now processing over 250,000 pieces of IT equipment per annum and has a re-use rate of between 40% and 70% depending on the type of equipment in question. The equipment is catalogued and carefully tested when it arrives at one of Wisetek's facilities. It is then inspected, and a decision is made as to how it will be processed. Up to 30% can often be re-used directly for the same purpose into secondary life cycle markets.

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Approximately 10% - 15% must be refurbished or repaired before it can be re-tested and sold in secondary markets. The remainder is dismantled and goes through a similar value extraction process at component level. When as much re-use value as possible has been extracted into the circular flow, the remainder is recycled to extract precious metals and rare earth elements. Processing also includes data erasure and chain of custody management on behalf of the original equipment owner.

Environmental Impact*

Wisetek estimates that in the year 2019, it assisted in reducing Green House Gas Emissions by 24,409,105lbs by processing 18,228,910lbs of IT/Data Centre material. This volume of material processed has enabled a saving of 524,154lbs of toxic materials diverted of potentially ending up in a harmful place to the Environment.

**Note: The environmental impact figures were calculated using the ITAD industry environmental impact calculator from e-stewards available at: <http://e-stewards.org/e-stewards-global-impact-calculator/>*

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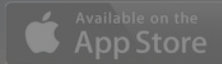
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The ZeroNet: Powering the Circular Economy



The ZeroNet is an app that allows householders to simply and quickly request a collection of unwanted items from your home, favouring a circular economy through reuse.

CE Practice Summary:

- A critical and missing piece of the circular jigsaw puzzle is a complete reimagining of the entire 'last mile' collection challenge.
- The ZeroNet - the world's first cloud-based technology platform designed explicitly around the logistical requirements of the Circular Economy (CE) - consists of a user app and driver app linked together by an operational portal, allows users to simply register a collection request from their own home.

Background Context

A critical and missing piece of the circular jigsaw puzzle is a complete reimagining of the entire 'last mile' collection challenge – a space currently monopolised by the traditional waste sector. In terms of the domestic recovery of e-Waste and textiles etc, we are attempting to solve several massive problems – e.g. over 50m tonnes of e-Waste inappropriately recycled each year globally and with over 90m tonnes of textiles waste created each year, clearly a whole new approach is now needed for post-consumer recovery. In the context of e-Waste and textiles etc, by recovering from the home in a structured and organised manner, it is possible to recover post-consumer materials/products in a manner that not only drives greater recycling but can also create the environment where superior recovery options are also possible including reuse, remanufacturing and servitisation models.

The ZeroNet's Value Proposition

We created the ZeroNet - the world's first cloud-based technology platform designed explicitly around the logistical requirements of the Circular Economy (CE), arguably the most important sustainability movement in the world right now and one that is firmly linked to a zero-carbon, zero-waste and resource efficient future. Our core proposition is to transform the way in which products and materials are recovered – typically from the home – and facilitate a revolution in high value zero-waste recovery activities including reuse, refurbishment, remanufacturing, re-filling as well as providing the core logistical infrastructure to enable the adoption and scale-up of circular business models.

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What does the ZeroNet platform do?

The ZeroNet platform, which consists of a user app and driver app linked together by an operational portal, allows users to simply register a collection request from their own home – currently this is focused on e-Waste and once many different collection requests have been registered, then a collection event is created which links with a highly functional driver app. This makes the collection highly efficient and cost effective but it also allows for the recovery of valuable post-consumer data bearing items (laptops, desktops and phones typically). Working with partners, we can facilitate the recovery and refurbishment for reuse of still-working IT equipment whilst ensuring that the user's data is securely erased. This is simply not possible with conventional unsecured collections either from the home or from Civic Amenity Centres/Household Waste Recycling Centres.

Impact to Date

The ZeroNet platform has been live in the English city of Brighton (in partnership with local reuse organisation Tech-Takeback) since Nov 2020 and it is revolutionising the recovery and repurposing of e-Waste beyond conventional recycling. In addition, reuse, refurbishment and remanufacturing options were possible to a far greater extent than with conventional collection. Genuine circular models are also being explored. CO2e reduction tracking is also possible.

As an example of the power of the ZeroNet platform in action, in April 2021 almost 100 laptop machines, recovered in Brighton via the ZeroNet, were refurbished, data-erased and resold to a series of 'digitally deprived' schools in the Brighton area. This is a classic example of reuse in action and if scaled throughout the UK (and beyond), it would have a massive impact on the ability to reuse unwanted 'domestically trapped' IT equipment. We believe this to be the first example anywhere in the world where '2nd life' laptops were recovered in this way.

Replicability/ Scalability Potential

As a cloud-based technology, the ZeroNet has massive potential for scalability. In terms of current opportunities in Ireland:

- Currently planning urban pilot (c. 25,000+ homes) with charity and reuse sector (via CRNI) for domestic textile recovery - Scheduled for Q4, 2021.
- Exploring opportunities for partnership with a national e-Waste Producer Responsibility Organisation (PRO)
- Currently planning a Irish pilot project – in Q4 2021 - for the domestic recovery and reuse of used data-bearing IT equipment. In cooperation with CRNI.

Conclusion

The ZeroNet is an ideal technology platform on which highly innovative, zero-waste, circular consumption models can be deployed in the coming years for: **local or city authorities, global brands as well as recyclers & reuse organisations**. It can also support branded take-back as well as EPR measures such as Deposit/Return management (DRS).

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WEEE Ireland: White Goods Repair Skillset for a Circular Economy

- Extending the lifespan of an appliance requires eco-design, the availability of spare parts *and* the availability of repair skills – the latter is currently lacking in Ireland.
- The *Skillset for a Circular Economy Project* will increase the amount and skills of field service (repair) technicians being trained on a year-by-year basis and improve capacity for transformation of the Irish White Goods' repair sector, providing a career pathway in this important waste prevention activity.

Background

WEEE Ireland is a not-for-profit Compliance Scheme owned by its Members' – who number more than 1200 Producers of electrical and electronic equipment (EEE) and batteries. The Scheme has operated under Ministerial approval since 2005 and is currently in its third approval programme 2017-2022. The Scheme works with collection partners and core indigenous recycling facilities in Ireland as well as specialist downstream processors and supports mandated EN WEEE standard through quality recycling to properly manage hazardous waste and recover resources. We estimate over 300 people in Ireland are directly employed in activities relating to the operation of contracts for the WEEE Ireland Scheme.

Extending the life of White Goods

If eco-design and availability of spare parts are critical to ensure the lifespan of an appliance can be extended, the availability of repair skills is another central component which is currently lacking in Ireland. Indeed, both consumers and OEMs highlighted the difficulty to find trained and authorised repair technicians across the country and the absence of appropriate training programmes to grow the current repair workforce and increase the lifespan of the white goods placed on the Irish market. Drawing from these observations, WEEE Ireland decided to lead on a White Goods Repair Skillset project and apply for funding as a founding member of the CIRCULÉIRE Platform.

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- Ireland's first circular economy innovation network.

Skillset for a Circular Economy Project

The Skillset project is run in partnership with FIT, an industry-led training initiative and registered social enterprise not for profit organisation ([FIT.ie](https://www.fit.ie)), and the [White Goods Association, an IBEC coordinated industry association](#) which represents most of the major manufacturers and distributors of white goods products in Ireland.

The aim of the Skillset project is to help develop an industry-accredited and standard-based repair training programme – to train young people or those looking to retrain later in their careers, to repair white goods that would otherwise end up as electrical waste.

Impact

Development of this program will focus attention on repair and reuse, at the top of the waste hierarchy. The curriculum will also include content related to sustainability and circularity. The kitchen appliances used to train students in practical diagnostic and repair skills have been provided by WGA members to a new training centre established in Dunshaughlin, Co. Meath.

The programme will increase the amount and skills of field service (repair) technicians being trained on a year-by-year basis and improve capacity for transformation of the Irish repair sector, providing a career pathway in this important waste prevention activity. The longer-term objective from the WGA is for the training programme to gain accreditation on the QQI framework of qualifications and continue under the auspices of FIT and national ETBs (Education and Training Boards).

This project is still in early stage, but the first pilot training course will begin during the summer of 2021. A technical committee provides practical advice and guidance to the project and is drawn from the after-sales service managers from many of Ireland's leading kitchen appliance OEM brands and their distributors.

Conclusion

This case study showcases the importance of cross supply-chain cooperation to benefit from funding opportunities available. This project could not have been developed without funding and knowledge resources from CIRCULÉIRE and ongoing collaboration between the WGA, FIT and WEEE Ireland.

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- Ireland's first circular economy innovation network.



P Carney Ltd: Manufacturers of Secondary Aluminium Ingots

CE Best Practice Summary:

- Remelting reclaimed aluminium to make new aluminium products has a 10fold reduction in carbon emissions compared to producing aluminium products from bauxite which is extracted out of the earth.
- For P. Carney this equates to over 50,000t per annum reduction of CO2 emissions.

Background

P. Carney Ltd is a family-owned business, based in County Meath and has been recycling and processing metals for over 50 years. The core business is to sort, process and melt aluminium waste to produce what is known in the industry as a 'Secondary Aluminium Ingot'.

Secondary aluminium is made from end-of-life aluminium products from post-consumer and post-industrial sources. Examples include machine parts, construction aluminium, aluminium from end-of-life vehicles (ELVs) and waste from the manufacturing sector that use primary aluminium sheet, plate or billet as their raw material. The secondary aluminium ingot we produce takes a fraction of the energy compared to that required to produce primary aluminium which is made from bauxite.

The main advantage of secondary aluminium has over primary is that the manufacturing process requires approximately 5% of the energy and consequently has a much lower carbon footprint. It must also be noted that aluminium waste can be melted and reprocessed ad infinitum and does not deteriorate over multiple remelting. In fact, it is commonplace to produce a higher quality secondary aluminium ingot than the original primary material might have been. This is possible by making specific calculated trace element additions to the alloy during our process which enhances the properties, quality, and performance of the secondary ingot.

P. Carney has an extensive range of aluminium suppliers throughout Ireland ranging from manufactures, scrap merchants and car breakers. Our aluminium ingots are exported mainly to Germany where they are remelted into new machine parts such as engines, gearboxes, transmissions etc. Our clients make parts for all the top German auto companies, and it would be safe to say that most German manufactured cars or trucks that are in Ireland have some aluminium parts that have originated from our ingots produced in the factory here in Crossakiel.

Over the years we have worked with our suppliers to increase the volumes and types of aluminium they supply us. We collect waste aluminium directly from the 'back door' of numerous manufacturing companies.

We have also invested significantly in furnace, burner and heat recovery technology and we are using new ultra-efficient natural gas burners in our melting process. We partnered with Gas Networks Ireland a few years ago to extend the main gas network to our facility in Crossakiel, a distance of 8km of network pipe. This provided us with an uninterrupted clean and sustainable energy source, guaranteeing a sustainable future for our business for many years.

Challenge & Solution

The challenge for the business over the coming years is to continuously lower our carbon footprint by reducing our energy consumption and waste through process improvements and developments. We will also avail of any future opportunities which may arise in the use of alternative greener and more sustainable fuel sources.

We have plans, through expansion of the business to increase the range and volume of aluminium that we can melt which will ultimately improve overall recycling and circularity on the island of Ireland. We will also be looking to our suppliers of aluminium to have some closed loop recycling in our process.

Impact

P. Carney has been the go-to outlet for most producers of aluminium and generators of waste aluminium in Ireland and our business has contributed greatly over the last 50 years to recycling of reclaimed aluminium. We estimate that the impact of producing 1 ton of secondary aluminium ingots can result in a reduction of up to 10 tonnes of carbon for every 1 ton primary production. For P. Carney this equates to over 50,000t per annum reduction of CO2 emissions.

Novelplast Teoranta: Creating a Circular Economy for Polymer 'Big Bags' (B2B Packaging)



CE Practice Summary:

- Switching from Polypropylene to rPet for 'Big Bags' can reduce the usage of virgin materials by over 5000 tons per year.

Company Background

Novelplast Teoranta are a plastic recycling company based in Gibbstown, Navan, Co Meath. The company is focussed on recycling difficult to recycle 'post-industrial' PET plastic materials and has been in operation since 2019. It uses a series of shredders and granulators to prepare the materials before processing them through the largest extrusion pelletiser for PET in Europe.

Switching from Polypropylene to rPET for 'Big Bags'

Typically the big bags used for storage of polymer granules and flakes are manufactured from polypropylene (PP). New technology was developed in 2019 to manufacture these big bags from recycled PET bottles, and Novelplast decided to implement a project to replace all of our PP bags with PET bags manufactured in Bulgaria – upwards of 10,000 bags per year, weighing approximately 20 tons.

Pilots & Partnerships to Close the Loop

Novelplast carried out extensive trials in conjunction with the bag manufacturer in Bulgaria, to assess ways that the bags could be firstly used by Novelplast, but also to assess if the bags could be recycled in the Novelplast process and the recycled materials sent back to the manufacturer for manufacturing into new bags.

Impact

Since the initiation of the project, Novelplast has begun working with other customers of this bag manufacturer to recycle their waste and excess bags, returning the recycled pellets to the manufacturer in Bulgaria. This has created a truly circular world for this type of bag, with the possibility to reduce the usage of virgin materials to make these bags by over 5000 tons per year. It is hoped that projects such as this can help to guide future legislation around the use of polymer based big bags in Ireland and elsewhere.

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Freefoam's Closed Loop Production Processes

CE Best Practice:

- Freefoam have implemented a closed-loop production system which enables them to re-use 95% of their PVC production residues or post-production waste (PPW).
- Since 2015, over 8,200 tonnes of virgin PVC materials has been replaced with recycled PVC in Freefoam's production processes through a range of innovations.
- These Freefoam's closed-loop production processes have resulted in a carbon saving of approx. 13,120 tonnes (2015-2020) and they are targeting 100% re-use of PVC by the end of 2022.

Background

Freefoam, established in Cork in 1990, is the leading manufacturer of a wide range of innovative PVC-UE fascia and soffit products and produce rainwater systems, external cladding, and interior panelling systems for the building industry in Ireland, the U.K., and Mainland Europe.

Until the late 1990s no recycled material was incorporated into our manufacturing processes – we relied entirely on bought in PVC blends from suppliers and production residues/scrap were sent to landfill. At this time, sub-standard products (using high levels of recycled material) from other suppliers in the marketplace made customers wary of products containing recycled material, giving recycled content a bad reputation.

Closing the Loop at Freefoam through partnerships & investment

None-the-less in the late 1990s we stopped sending production waste to landfill and we started re-introducing some white PVC foam post-production waste back into our process at a low addition rate with remaining post-production waste (PPW) sent off site to be recycled. We focused on improving our internal processes and partnering with our suppliers to develop more efficient and superior materials. This had the combined effect of reducing our waste levels and enhancing the recyclability of that waste. We developed formulations and processes to allow re-use rates without compromising the quality of the finished product.

In 2005 Freefoam invested in innovative tooling and equipment to produce co-extruded gutters and downpipes. Freeflow® downpipe systems are manufactured using a combination of recycled and virgin materials to minimise environmental impact and optimise product performance. Recycled content can vary a little, however it is typically up to 85% of the final product. Prior to 2005 no recycled content was used in this process. This innovation results in approx. 1,600 tonnes per annum of recycled PVC being re-used on site, replacing the use of virgin materials to make new products with an associated carbon reduction of approx. 2,560 tonnes per annum.

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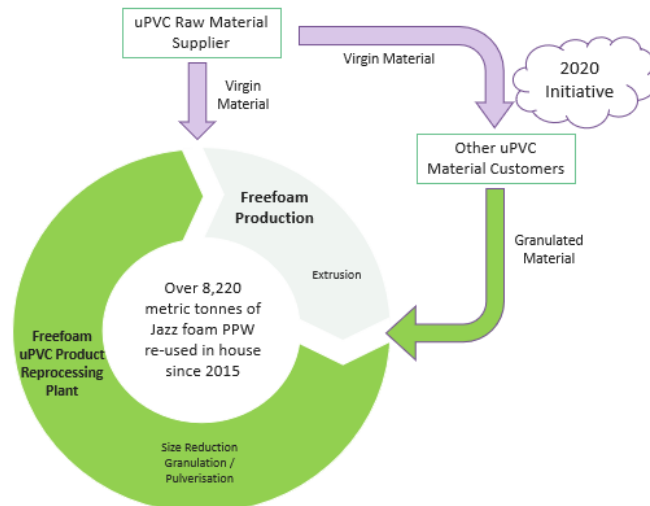
For further information see: www.freefoam.com

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In 2008 the company invested in a mixing plant which allowed us to formulate and produce our own PVC blends. This backward integration allowed us to further invest in materials and formulation R&D. We improved the performance of our formulations and reduced our waste levels even further. Simultaneously, in 2008, we stopped the sale of the coloured foam PPW (to a recycling company for a fraction of the cost), though we still had no way of reusing it ending up with a large store of recycled material.

2015 - 2021 Freefoam - Jazz uPVC Foam Post Production Waste (PPW) Closed Loop



Impact of Closed Loop Production

In 2015, based on a culmination of investment in infrastructure and expenditure on formulation R&D we were able to manufacture fascia boards that included high levels of coloured foam PPW.

Adding high levels of post-production material, however, usually increases the weight of the products. Yet, we designed a process that allows us to use a very high addition rate without any increase in the weight of the finished goods – using the least amount of materials possible whilst making a profile that is fit for purpose and meets our high-quality standards.

Since 2015, this initiative has enabled Freefoam to substitute over 8,200 tonnes of virgin PVC material with recycled PVC, resulting in a carbon saving of approx. 13,120 tonnes (2015-2020).

Conclusion

Freefoam is fully committed to sustainability and playing our part to combat climate change. Part of our plans for 2021 and beyond is to re-use 100% of all PVC materials that enter our production facilities in the manufacture of finished goods. By the end of 2020 we were re-using 95% and, with numerous projects ongoing, we expect to meet our 100% target by the end of 2022.

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