



# From Waste to Wealth

The benefits of a Circular  
Economy in Ireland



# Ireland's Circular Economy

**Ireland is currently operating a linear economy model following a 'take-make-waste' pathway for resources, manufacturing and products.** This traditional, non-sustainable economic model is not only wasteful and harmful to the natural environment, but it is also a barrier to progress against national climate targets, particularly for the waste sector. At present, many business models are centred around linear economies due to this model being engrained in modern society, such as extracting oil to manufacture single-use plastic products and disposing of them in landfill.

**In contrast, a circular economy model follows a 'take-make-remake' pathway for resources, seeking to prolong product lifecycles for as long as possible and ensuring waste materials can be salvaged and re-used as raw materials elsewhere.** A national pivot towards circularity will not only reduce resource intensity, but will also aid in meeting national climate objectives following a reduction in carbon-intensive practices, such as resource extraction and processing.

**This report provides an up-to-date review of Ireland's evolving circular economy policy landscape, with a deep dive into several key sectors (food, packaging, construction & e-waste) which may be impacted by changing policies and government plans.**

# From Policy to Practice

Circular economy policy is gaining momentum across the world as countries aim to reduce their environmental impact and promote sustainable economic growth. Ireland has recognised the importance of transitioning to a circular economy and has implemented a suite of policies and initiatives to support the changes needed across government, industry, and individuals.

The driving forces behind this change can be attributed to European Union (EU) programmes for tackling climate and waste issues, such as the Paris Agreement, the EU Green Deal, and the EU Circular Economy package. Ireland's transition towards circularity strengthened in 2020, with the publication of the Waste Action Plan for a Circular Economy (WAPCE) 2020-2025, followed by the Whole of Government Circular Economy Strategy in 2022, which is now legally grounded by the Circular Economy Bill.

These policies outline Ireland's vision for a more sustainable future, emphasising the need to reduce waste, increase resource efficiency, and promote a more circular economy. There are a number of actions that the Government will take to achieve this vision, including:



## Investing in Research & Innovation

Investing in research and innovation that supports the circular economy is critical at the outset of Ireland's transition. This includes funding for research on new circular business models, materials and technologies that can help reduce waste and increase resource efficiency. Funding will play a major role in the level of circular innovation across the Irish business landscape.

### Circular Economy Innovation Grant Scheme

The Circular Economy Innovation Grant Scheme (CEIGS) was established in 2021 to support innovation and circular economy projects by social enterprises, voluntary and community organisations, and businesses with fewer than 50 employees across Ireland to promote a more circular economy, with up to €100,000 available for individual projects that demonstrate exceptional impact. This year-on-year increase is in line with the Government's commitment in the Circular Economy Strategy 2022-2023 to increase CEIGS funding each year to 2024<sup>2</sup>.

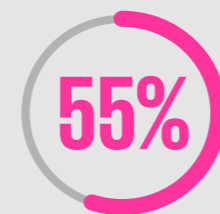


## Whole of Government Approach

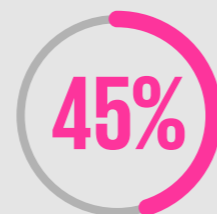
The Whole of Government Circular Economy Strategy, published in 2022, sets out a roadmap for Ireland's circular economy. The Strategy identifies priority sectors and actions that need to be taken to reduce waste and increase resource efficiency.

### Key Figures

Addressing how we manufacture, process and use products is key to meeting Ireland's climate targets.



of national emissions can be addressed through increased energy efficiency and a transition away from fossil fuels



of emissions are derived from production and use of goods<sup>1</sup>.

### Green Tenders

Green Tenders is Ireland's response to ensure sustainable development forms part of public procurement processes. By including environmental criteria in public procurement, authorities are actively encouraging the widespread uptake of environmental technologies and the development of environmentally-sound products. Eight product and service groups are prioritised through Green Tenders: construction, if following: energy; transport; food and catering services; cleaning products and services; paper; uniforms and other textiles; and ICT. The Climate Action Plan 2023 (CAP 23) has placed increased emphasis on Green Public Procurement (GPP) as a means for future emissions reduction<sup>3</sup>.



## Supporting Sustainable Procurement

The Government aims to promote sustainable procurement practices across all sectors, including public procurement. This will help drive demand for more sustainable products and services and will encourage the development of more circular supply chains.

<sup>1</sup> <https://www.gov.ie/en/publication/b542d-whole-of-government-circular-economy-strategy-2022-2023-living-more-using-less/>

<sup>2</sup> <https://www.gov.ie/en/press-release/4fe2a-minister-of-state-smyth-opens-circular-economy-innovation-grant-scheme-2022-for-applications/>



## Developing Infrastructure for a Circular Economy

Investment in infrastructure to support a more circular economy is needed to increase circular capabilities across Ireland. This infrastructure includes waste collection and processing facilities, and recycling and reuse centres.

### Waste Action Plan for a Circular Economy

The Waste Action Plan for a Circular Economy is Ireland's roadmap for waste planning and management for the period 2021-2025. The Plan, which feeds into the recent 'Whole of Government Circular Economy Strategy' is the national waste policy to inform and direct waste management and planning in Ireland for the future. Several key targets of the Plan include tackling Ireland's waste management infrastructure problems, addressing issues such as waste segregation infrastructure for apartment dwellers, reviewing State support for developing recycling infrastructure, and examining the existing legislation and procedures for developing waste management facilities<sup>4</sup>.



## Encouraging Behavioural Change

Although the climate crisis is widely spoken about in media all around the globe, the concept of a circular economy is not at the forefront of most consumers' minds, despite the two being intrinsically linked. Addressing the challenge among individuals and businesses to reduce waste and increase resource efficiency requires a top-down approach from government. This includes the introduction of initiatives such as education and awareness-raising campaigns, and incentives to encourage the adoption of more sustainable practices.

3. <https://www.gov.ie/en/publication/74075-green-tenders-an-action-plan-on-green-public-procurement/>  
4. <https://www.gov.ie/pdf/?file=https://assets.gov.ie/86647/dcf554a4-0fb7-4d9c-9714-0b1fbc7dbc1a.pdf#page=null>  
5. <https://www.jstor.org/stable/pdf/resrep38152.pdf?addFooter=false>



### Key Figures

A recent survey by the Stockholm Environmental Institute found that only



of respondents had received basic training on topics related to the circular economy<sup>5</sup>.

As of 2020, Ireland has set an ambitious waste reduction target of 55% by 2030. This target will not only serve to accelerate circular activities, but it will also assist in meeting national climate targets, such as our commitment to reducing 51% of greenhouse gas emissions (GHGs) by 2030, which will require significant reductions in waste and resource use. As such, there are a number of interlinkages between the Government's circular economy initiatives and the CAP 23, which are outlined in this report.

# Re-Thinking Plastics & Packaging

A circular economy is a system whereby resources are kept in the value chain for as long as possible, where waste is minimised, and materials are recycled and/or repurposed at the end of their useful life. Plastics and packaging play a significant role in this system, as they have rapidly become some of the most commonly used materials in daily life. In Ireland, there are several initiatives underway to promote circularity for plastics and packaging.

One such initiative is the Plastics Action Alliance, which is a voluntary agreement among ten of Ireland's leading agricultural processing and food businesses to make the plastic packaging in their respective supply chains more sustainable. The Alliance aims to promote the use of more innovative and sustainable packaging solutions, increase recycling rates, and reduce waste and its impacts. The Alliance also supports the development of new technologies and infrastructure to improve the circularity of plastic waste.

Another initiative is the Government's National Waste Action Plan, which includes a target of achieving 55% recycling of plastic packaging by 2030. The Plan also includes measures to reduce plastic waste, such as a ban on single-use plastics and a deposit and return scheme for plastic bottles.

In addition, many businesses in Ireland are taking steps to reduce their use of plastics and promote circularity. For example, some companies are switching to biodegradable or compostable packaging, while others are now using recycled materials in their products.

Overall, the focus on plastics and packaging in Ireland is shifting towards more sustainable options, where materials are kept in use for as long as possible and waste is minimised. This requires a collaborative effort from businesses, government and consumers to reduce plastic waste, promote recycling, and develop innovative and sustainable alternatives to existing plastics and packaging supply chains.



### Key Enablers

#### Single Use Plastics

The EU has taken a strong position on plastics and packaging, particularly through the introduction of Directive (EU) 2019/904 on the reduction of the impact of certain plastic products on the environment<sup>6</sup>. As of July 2021, a number of single-use plastic (SUP) products have been banned from being placed on the Irish market, including cotton bud sticks, cutlery, plates, stirrers, chopsticks, straws, expanded polystyrene single use food and beverage containers, and all oxo-degradable plastic products. Other implications for the Irish market include stricter labelling requirements, obligatory circular product design for certain products, improved waste separation and collection, and extended producer responsibility (EPR).

#### Deposit Return Scheme

Ireland's first national deposit-return scheme (DRS) was launched in November 2022 to rapidly increase the amount of plastic bottles and aluminium cans that are recycled each year by applying a small, refundable fee to containers (15 cent for containers <500ml and 25 cent for containers >500ml). All producers and retailers are legally obliged to register with the scheme 'Re-Turn'<sup>7</sup>.

6. <https://eur-lex.europa.eu/eli/dir/2019/904/oj>  
7. <https://re-turn.ie/>



### Ireland's Food Waste

The major sources of Ireland's food waste are derived from households (31%), manufacturing and processing (29%), and restaurants and food services (23%). While increasing the roll-out of brown/food bins helps to address the amount of household waste, industrial food manufacturing and services industries must begin to look towards more innovative solutions to reduce the amount of waste involved in their operations. For example, animal tissue resulting from meat processing plants could explore other avenues to turn their waste into products, such as pet feed, anaerobic digestion or fertilisers.

# Feeding the Future: Turning Food Waste into a Resource

Ireland, like many developed countries, faces significant challenges with food waste. A circular approach can help to address this problem by focusing on reducing waste at the production stage and seeking alternative uses for unavoidable waste.

Some practical steps for consideration to tackle this issue include:



## Reducing Food Waste at the Source

One of the most effective ways to prevent food waste is to reduce it at the source. This can be achieved through educating households and businesses about proper food storage and preservation techniques. Additionally, retailers can implement "ugly produce" programs that sell imperfect produce at a discounted price to reduce food waste due to aesthetic standards.

Conceptual frameworks, such as the waste management hierarchy, aim to help guide waste decisions at both individual and organisational levels, ranging from prevention (most preferred) to disposal (least preferred).

### Key Figures



Food waste generation in Ireland is estimated at

**770,900**  
tonnes per year



which equates to approximately

**156 kgs**  
per person<sup>8</sup>



### Leading the Change

One social enterprise paving the way forward for eliminating food waste from supermarkets is FoodCloud. They connect businesses that have surplus food with Charities and Community Groups that need it. Since setting up in 2013, FoodCloud has re-distributed over 201.3 million meals in Ireland and internationally, avoiding over 270,500 tonnes of CO<sub>2</sub> equivalent from being released into the atmosphere.<sup>9</sup>

TooGoodToGo is another company seeking to revolutionise how businesses deal with unsold food products at the end of the day. By using a mobile app, customers can purchase unsold food from their favourite restaurants, grocery stores, cafés, and shops that would otherwise go to waste because it hasn't been sold on time.<sup>10</sup>

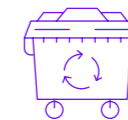


## Implementing Food Recovery & Redistribution Programs

This can be done through partnerships with local food banks and other community organisations to distribute excess food from supermarkets, restaurants and other food outlets.

### Low Carbon Farming

The Department of Agriculture, Food and the Marine (DAFM) has announced a €3m investment for an integrated anaerobic digestion and green biorefining demonstration initiative. 'Farm Zero C' is a research project co-led by BiOrbic, Ireland's national bioeconomy research centre, and the Carbery Group, a cooperative based in West Cork, which aims to create an economically viable and climate-neutral dairy farm. The project will demonstrate the use of renewable energy sources and the displacement of off-farm emissions associated with a dairy farm through the production of local sources of protein and biobased fertiliser.<sup>11</sup> In recognition of the important role sustainable farming has to play in meeting Ireland's climate targets, the initiative received an additional €3m in funding in early 2023 for further development.



## Composting & Anaerobic Digestion

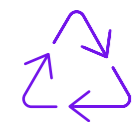
Composting and anaerobic digestion are effective ways to transform food waste into a valuable resource. Households and small to medium-sized businesses can compost their food waste on-site, or seek alternative options from their waste collection providers. For larger businesses and institutions, other opportunities may exist to divert food waste to anaerobic digestion facilities for energy production.

8. <https://www.epa.ie/our-services/monitoring-assessment/waste/national-waste-statistics/food/>

9. <https://food.cloud/>  
10. <https://www.toogoodtogo.com/en-ie/user>  
11. <https://www.gov.ie/en/press-release/365ff-ministers-mconalogue-and-heydor-announce-3-million-for-integrated-anaerobic-digestion-and-green-biorefining-demonstration-initiative/>

# Building a Circular Future: Challenges & Opportunities for the Construction Sector

In recent years the construction sector has faced increasing pressure to reduce waste and become more sustainable. With a severe housing shortage in Ireland and many urban areas undergoing regeneration, the sector faces the twin challenges of shift to significantly increase its sustainability whilst also meeting demand. The sector is responsible for 48% of all waste generated in Ireland, producing approximately 8.2 million tonnes of construction and demolition waste (C&Dw) in Ireland in 2020<sup>12</sup>. Whilst the quantity of Ireland's C&Dw generated decreased by 0.6 million tonnes from 2019 to 2020, this was reflective of the COVID-19 restrictions on the sector.



## Increasing the recycling rate of C&Dw

Ireland surpassed its material recovery rate target of 70% by 8% in 2020<sup>13</sup>. However, the majority of the C&Dw was backfilled (82%), which relates to refilling an excavated area using soils and aggregates. This process is viewed as downcycling and a significant barrier to a circular economy approach in the construction sector. Just 8% of C&Dw was recycled, with the remaining 10% sent for disposal. However, the National End-of-Waste Decision<sup>14</sup> recently published as a draft by the EPA, will allow recycled aggregates to be reclassified from a waste material to a secondary product, and will likely result in an increased rate of recycling.

12. <https://www.epa.ie/our-services/monitoring-assessment/waste/national-waste-statistics/construction-demolition/>  
 13. <https://www.epa.ie/our-services/monitoring-assessment/waste/national-waste-statistics/construction-demolition/>  
 14. <https://www.epa.ie/publications/corporate/consultations/consultations/draft-national-end-of-waste-decision-eow-n0012023of-31-january-2023.php>

A fully circular construction sector is essential for Ireland to achieve its climate goals. The CAP 23 targets a 30% decrease in the embodied carbon in construction materials in Ireland by 2030. This will also require the public sector to use low-carbon construction methods and materials for directly procured construction projects by 2030.

Some practical steps for consideration to tackle this issue include:

### CMEx

In 2021, the Irish Green Building Council launched the CMEx project, a digital platform that connects organisations so that they can exchange or trade excess materials between them. The platform is also open to individuals that would like to find materials for the project. By keeping the materials in use, the project aims to allow construction companies in Ireland to divert their C&Dw streams from landfill, incineration and downcycling.



## Choosing Alternative Materials

In 2019, the Irish construction sector produced 38 million tonnes of aggregates, which amongst others was used to manufacture 5 million m<sup>3</sup> of ready-mixed concrete and 2 million tonnes of bituminous surfacing materials<sup>15</sup>. The high volumes of waste backfilled in Ireland could potentially be reused to reduce the use of raw materials. Whilst aggregates account for approximately 60 to 75% of the total volume of concrete, cement which comprises from 10 to 15% of a concrete mix is the material's biggest contributor to emissions. The production of cement is an extremely energy-intensive process, requiring temperatures of up to 1400°C. One metric tonne of cement produces approximately 600kg of CO<sub>2</sub> emissions<sup>16</sup>. The European cement standard allows up to 40% of a cement clinker content to be replaced with Supplementary Cementitious Materials (SCMs)<sup>17</sup>. Many of these SCMs are by-products of industrial processes and their use has allowed the cement industry to implement a circular approach, materials from landfill. Two widely used SCMs in the industry are Ground Granulated Blast-furnace Slag (GGBS), a by-product of the steel manufacturing process, and Fly Ash (FA), a by-product of coal-fired power

stations. However, with coal-fired power stations being phased out due to their high emissions and iron and steel production decreasing, the global supplies of these SCMs are decreasing. Manufacturers are now seeking viable alternatives for these two SCMs, with Limestone filler emerging as an attractive alternative. Limestone filler is manufactured by crushing limestone and has the potential to be manufactured in a circular approach by using recycled aggregates. Alternative construction materials will play a crucial role in transitioning the construction sector from linear to make circular.

### Key Figures



Concrete is one of the most material consumed materials on earth, second only to water. Global concrete production per capita has increased by threefold in the past 40 years, with its demand growing at a more rapid pace than that for steel or wood<sup>18</sup>.

### Oisín House

Oisín House was a five-story 1970's office block in Dublin City centre<sup>19</sup>. The building was set to be demolished as part of Trinity College Dublin's development plan. The aim of the project was zero waste to landfill and to achieve this and to meet Dublin City Council's planning condition, a waste management plan site specific was developed by Hegarty Demolition. The waste management plan identified eight main waste streams: reinforced concrete, blockwork, timber, steel, plasterboard, ceiling tiles, carpets, and glass. The demolition stripped the structure back to its shell and core, allowing the building to be completely free of soft strip material prior to mechanical demolition. Concrete made up 90% of the waste generated on-site and this soft strip approach enabled the concrete to be suitable for reuse.



## Implement better waste management practices

Improved waste management practices can help keep construction waste to a minimum. Effective waste management practices include segregating C&Dw on-site into different waste streams. When C&Dw is not segregated on-site, it risks contamination with hazardous materials such as solvents and asbestos. This can reduce the resource value of C&Dw generated and decrease any potential to be recycled.

15. <https://irishconcrete.ie/industry-at-a-glance/>  
 16. <https://www.iea.org/reports/cement>  
 17. EN 197-1:2011. Cement – Part 1: Composition, specifications, and conformity criteria for common cements.  
 18. <https://www.nature.com/articles/d41586-021-02612-5>  
 19. <https://www.igbc.ie/wp-content/uploads/2018/06/IGBC-Report-Web-Final-2.1.06.18.pdf>

# Leading the Charge: The Future of E-Waste Disposal

Waste Electrical and Electronic Equipment (WEEE) is one of the world's fastest-growing waste streams. In 2020, Ireland collected its highest ever quantity of WEEE for treatment, at 64,856 tonnes<sup>20</sup>. This figure represented a 4% increase on the quantity collected in 2019. The WEEE waste stream is comprised of large equipment (e.g. washing machines and ovens), small equipment (e.g. kettles, toasters), temperature exchange equipments (e.g. fridges, freezers), screens and monitors, lamps, small IT, and telecommunication equipment.

Some practical steps for consideration to tackle this issue include:



## Re-evaluate the need to upgrade

Reducing how often we make a new technological purchase can help mitigate the e-waste problem. With many tech manufacturers releasing updated versions of their products on a frequent basis, consumers often feel pressured to upgrade. This business strategy is known as 'planned obsolescence,' and is a major contributor to the e-waste problem, especially with smartphones. The UN Environmental Programme stated that the product stage for mobile phones accounts for 80% of its lifetime emissions. Buying a refurbished smartphone can significantly reduce the environmental impact of a smartphone.

### Europe's refurbished phone market

The second-hand phone market is worth €100 billion in Europe, with used or refurbished phones now accounting for up to 10% of the market<sup>21</sup>. Companies including, Swappie, offer a digital platform for consumers to sell their used smartphones and also buy refurbished ones.

20. <https://www.epa.ie/our-services/monitoring-assessment/waste/national-waste-statistics/weee/>  
21. <https://irishtechnews.ie/swappie-raises-108m-series-c-to-accelerate-growth>



### RepairMyStuff

RepairMyStuff.ie is an initiative led by Monaghan County Council together with other local authorities to connect consumers with repair businesses. The online directory has over 800 authorised repair professionals across the country.



## Repairing electrical goods

We live in a linear economy where when a household electrical good such as a washing machine or fridge breaks, often it is both cheaper and more convenient for the consumer to replace the product rather than repair it. To tackle this issue the European Commission recently proposed the 'Right to Repair' policy. The policy will legally require manufacturers of electrical goods to make spare parts available to buy and give consumers better access to reparation services.



## Disposing of e-waste correctly

Substantial amounts of WEEE are still being disposed of in household bins. EPA data shows that WEEE accounted for 0.9% of waste in the residual bin and 0.7% of waste in the recycling bin in 2017-2018<sup>22</sup>. The incorrect disposal of WEEE poses a major environmental and health risk if not managed correctly.

### Key Figures



The pandemic saw a major increase in the quantity of Electrical and Electronic Equipment placed on the Irish market, increasing by 11% between 2019 and 2020<sup>20</sup>.

### Key Figures

**4 to 5kg**  
per capita



EU households holding onto broken or unused electrical goods amount to 4 to 5kg of hoarded electrical waste per capita<sup>23</sup>.

### WEEE Ireland

WEEE Ireland offers free e-waste recycling at authorised collection points throughout the country. The scheme collected 18.7 million WEEE appliances in 2021.

22. <https://www.epa.ie/our-services/monitoring-assessment/waste/national-waste-statistics/weee/>  
23. [https://weee-forum.org/lvs\\_news/international-e-waste-day-2021/](https://weee-forum.org/lvs_news/international-e-waste-day-2021/)

# What does this mean for businesses?

It is now widely recognised that the circular economy agenda is fundamentally interlinked with the net-zero agenda, both on a global and national scale. As Ireland begins to ramp up actions to curb national emissions through the latest Climate Action Plan, it is imperative that circularity remains central to other national strategies and is utilised as a lever for change across business supply chains.

With ambitious waste reduction targets and the rollout of new schemes like the DRS and the CEIGS, and in a national and European policy context the National End-of-Waste decision on recycled aggregates and the 'Right to Repair' policy, businesses that operate in resource-intensive and waste-generating industries can expect significant changes to their operations over the coming years. Companies should evaluate all aspects of their supply chains to seek ways of improving circularity through novel methods of waste reduction or innovative product design. By incorporating circular practices into business models at an early stage, companies can stay one step ahead of forthcoming legislation, such as the Corporate Sustainability Reporting Directive (CSRD) circular economy performance indicators in 2025, and act as leaders in the delivery of climate commitments whilst creating value across their supply chains.

## Contact Us

KPMG's Sustainable Futures team of experts draw on the insights and experience of a global multidisciplinary practice. We have particular expertise in advising clients in:



**Strategy creation and development**



**Regulation assessments**



**Circular Economy strategy development and implementation**



**Risk Integration**



**Impact assessments and supply chain modelling**



**ESG Due Diligence**



**Consumer Behaviour Change models and impact**



**Non-Financial Assurance and Reporting services**



**Collaboration and Convening initiatives across markets**



**Life Cycle Assessment**



**Russell Smyth**

Partner  
Head of KPMG Sustainable Futures  
T: +44 7738 603869  
E: russell.smyth@kpmg.ie



**Tim Keenan**

Consultant  
T: +353 87 111 6979  
E: tim.keenan@kpmg.ie



**Aaron Lowe**

Analyst  
T: +353 86 136 1838  
E: aaron.lowe@kpmg.ie





kpmg.ie

The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavor to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

© 2023 KPMG, an Irish partnership and a member firm of the KPMG global organisation of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

The KPMG name and logo are registered trademarks of KPMG International Limited ("KPMG International"), a private English company limited by guarantee.

Produced by: KPMG's Creative Services.

Publication Date: May 2023 (9336)