Rialtas na hÉireann
Government of Ireland

A Waste Action Plan for a Circular Economy

Ireland's National Waste Policy 2020-2025

Prepared by the Department of
Communications, Climate Action and Environment
gov.ie

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Ministerial Foreword

Foreword by Minister Eamon Ryan

The Programme for Government – 'Our Shared Future' – correctly identifies that we are at a defining moment for our country. The unprecedented challenges posed by the COVID-19 pandemic have stretched our social and economic fabric in ways that were unimaginable just a few short months ago. As we emerge from what we hope are the worst days of the pandemic and turn our attention from containment to the urgent task of rebuilding, we cannot forget that we are also dealing with a climate crisis and a biodiversity emergency. It is vital that the initiatives and policies that we put in place now address not just the immediate challenges of post-COVID recovery, but also those longer-term environmental threats. Failure to do so would be a missed opportunity, an opportunity that may not be given to us again, a failure that future generations will find difficult to understand or to forgive.

This is an enormous task, but one we are determined to accomplish, because only a green recovery can deliver the healthy environment and quality of life that our citizens deserve. Only a sustainable recovery can secure the kind of jobs that will be in demand in a decarbonising world. Of course, we are not alone in facing these challenges or in trying to find solutions. The European Green Deal sets out a roadmap for a transition to a new economy, where climate and environmental challenges are turned into opportunities. Circularity is central to the Green Deal, and aims not only to help deliver on its environmental aspirations but to ensure that resources are kept within the local economy for as long as possible. It is an opportune time, therefore, to be launching this 'Waste Action Plan for a Circular Economy'.

As its name suggests, the 'Waste Action Plan for a Circular Economy' goes beyond the management of waste and addresses how we look at resources more broadly, capturing and maximising the value of materials that may in the past have been discarded. A key objective of this Action Plan is therefore to shift the focus away back up the product life cycle, to remove or design out harmful waste, to extend the life of the products and goods we use and prevent waste arising in the first place – consistent with the concept of a zero-waste future.

The plan identifies opportunities for the application of circular economy principles across a range of areas such as food, where we generate 1.3 million tonnes of waste per year, or end-of-waste and by-products, where improvements in the regulatory regime can divert material from waste to beneficial reuse. It also gives full effect to many of the commitments in the Programme for Government, including the introduction of a deposit and return scheme for plastic bottles, and measures to support the development of indigenous treatment capacity, supporting national economic recovery. We are introducing measures to deal with single use plastics, which contribute so much to the pollution of our ecosystems and marine environment. The plan also recognises the importance of eco- and smart design in waste prevention through the delivery of products that are more amenable to recycling or reuse of constituent components, and commits to incentivising innovation in this important area.

In taking these steps now, we open up opportunities for job creation in innovative new fields, while simultaneously reducing our carbon footprint and helping us towards our climate targets. The 'Waste Action Plan for a Circular Economy' not only reflects the level of ambition across Europe in the waste and circular economy areas but offers us a chance to become leaders in the EU and internationally in embedding circularity across our society and economy.

It will help ensure that we not only meet our legal targets, but also that we are positioning Ireland to take full advantage of the emerging new economy. It is a step on our new journey towards a brighter and more sustainable future, and I look forward to seeing the delivery of its many ambitious measures.

Executive Summary
Vision

Executive Summary

Vision

Traditionally, waste policy has tended to focus on how we treat the waste we produce and how to achieve the right balance between waste recycling, recovery and disposal. Over the past two decades Ireland has made significant progress in driving our performance up the waste hierarchy and moving away from disposal as our primary treatment option. Having been found by the European Court of Justice in 2005 to be "generally and persistently" failing to meet the requirements of the Waste Framework Directive, we are either fully achieving or are on track to achieve all our EU waste targets.

However, waste policy can no longer be about the narrow consideration of how to treat the waste we produce, implicitly based on a linear or take-make-waste consumption model that cannot be sustained. Our policy focus must be broader, looking first at how we consume materials and resources, how we design the products that households and businesses use, how we prevent waste generation and resource consumption and how we extend the productive life of all goods and products in our society and economy.

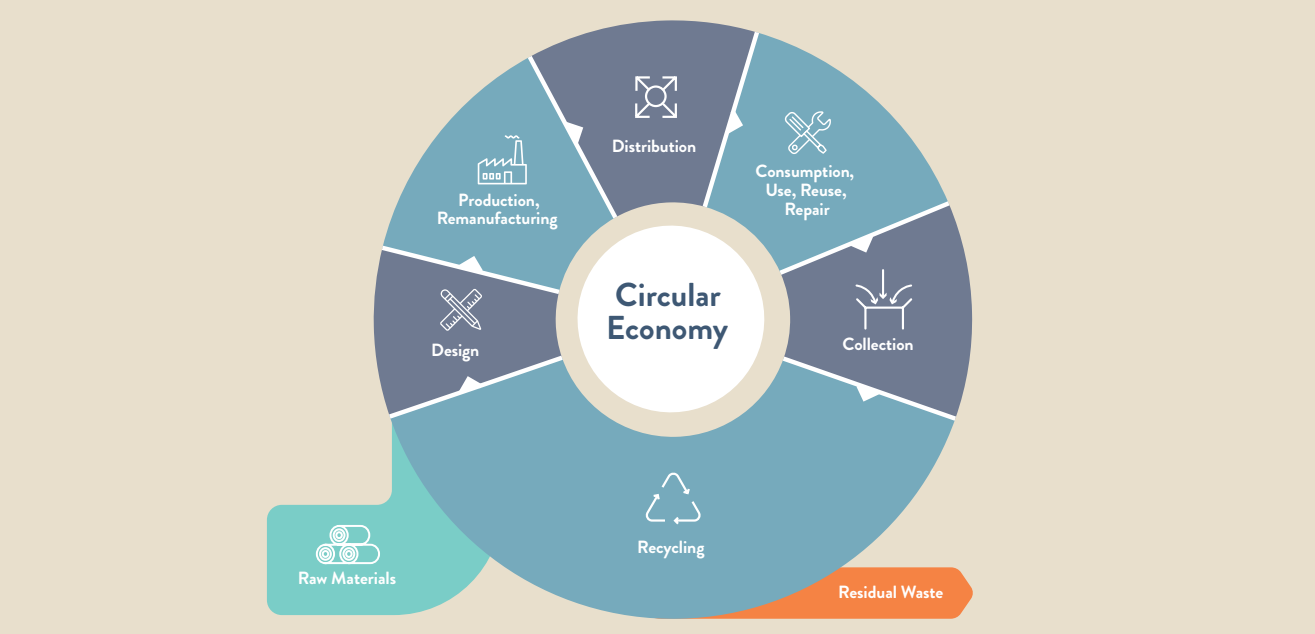
In other words, we must transition to a circular economy.

Taking this more holistic view allows us to focus on the impacts of our consumption patterns beyond just waste generation. On a global level, the linear consumption model of increasing extraction of natural resources and disposal of waste is a major contributor to habitat and biodiversity loss and contributes to global warming. According to the circularity gap report 2020, material consumption has trebled from 26.7 billion tonnes in 1970 to 92 billion tonnes in 2017. A primary driver of global habitat loss and deforestation is the extraction of resources, the majority of which are wasted.

Half of total greenhouse gas (GHG) emissions and more than 90% of biodiversity loss and water stress come from resource extraction and processing. According to the United Nations, if food waste were a country, it would be the third largest global greenhouse gas emitter, behind only China and the United States.

By 2050, we will need three planet earths to meet our resource demands in a business as usual scenario. A transition to a circular economy offers the possibility of a sustainable alternative future and is a fundamental step towards achieving climate targets and United Nations Sustainable Development Goals (SDGs).

Figure 1: The circular economy



Source: National Waste Prevention Programme

Meeting climate targets requires a transformation in the way we produce and use goods. Emissions reductions based on a 'business as usual' linear consumption model will not deliver the emissions reductions we need. The Ellen MacArthur Foundation estimates that climate action efforts focusing on a transition away from fossil fuels towards renewables and supplemented by energy efficiency measures can only address 55% of emissions.

The remaining 45% comes from making things. Therefore, making less 'stuff' or making 'stuff' with fewer resources - the essence of the circular economy - has a key role to play in climate action.

Ireland is fully committed to transitioning to a circular economy.

EU strategies to further push Europe's economy towards a more circular model play a significant role in the 'European Green Deal' culminating in the Second Circular Economy Action Plan launched in March 2020.

The **2020 Circular Economy Action Plan 'For a cleaner and more competitive Europe'** from the European Commission recognises the need to accelerate this transition to the entire mainstream economy. It takes a multi-dimensional approach to the many challenges:

- A new **sustainable product policy framework** that will leverage change through design, purchasing power and a new industrial strategy.
- It identifies **7 key product value chains:** electronics and ICT; batteries and vehicles; packaging; plastics; textiles; construction and buildings; and food, water and nutrients.
- It proposes **6 key actions on waste** including waste reduction targets; harmonising collections; measures around substances of concern; scoping more EU-wide end-of-waste criteria; revising shipment rules.
- **Strategic interventions** across skills, social policy,

just transition, climate action, state aid and working globally.

Domestically, transposition this year (2020) of the revised EU Waste Directives will hardwire the new legal commitments agreed in 2018 on recycling and landfilling for 2025 and 2030 into the Irish economy and society.

While the drive to meet the targets provides a starting point for the deeper changes required, more is being demanded of us even before these targets have taken effect. Every sector, every household, every business and organisation across Ireland has a role to play in effecting the transition to a circular economy. Through increased awareness, better-informed consumption decisions and buy-in to a shared responsibility, Ireland can become a leader in the transition to a circular economy delivering environmental, social and economic benefits.

This 'Waste Action Plan for a Circular Economy' is an action focused plan that will place Ireland at the vanguard of EU efforts. It is a roadmap for Ireland to embrace the opportunities in becoming a circular economy in the decade ahead. It is the product of extensive public and stakeholder engagement through a sectoral engagement in 2019, a formal public consultation in 2020 and the work of a cross-sectoral Waste Advisory Group (membership and details at Appendix 1).

The overarching objectives of this action plan are to:

- shift the focus away from waste disposal and treatment to ensure that materials and products remain in productive use for longer thereby preventing waste and supporting reuse through a policy framework that discourages the wasting of resources and rewards circularity;
- make producers who manufacture and sell disposable goods for profit environmentally accountable for the products they place on the market;
- ensure that measures support sustainable economic models (for example by supporting the use of recycled over virgin materials);
- harness the reach and influence of all sectors including the voluntary sector, R&D, producers / manufacturers, regulatory bodies, civic society; and
- support clear and robust institutional arrangements for the waste sector, including through a strengthened role for Local Authorities (LAs).

Some of the measures in this document can be implemented immediately. Others require legislative or institutional change. A new Waste Management (Circular Economy) Bill will be introduced to provide the necessary underpinning for relevant measures. The work of the cross-sectoral Waste Advisory Group which has assisted in developing this plan will move now towards supporting its implementation.

Circular Economy

Circular Economy

The circular economy term is well-established amongst waste prevention and reduction networks and communities. It is not so well understood however by the general public. With increasing awareness of the stress that we are placing on our environmental resources, the concept is now spreading across sectors such as manufacturing, agriculture, water management and transport to name just a few. The circular economy can contribute to a number of the United Nations Sustainable Development Goals (SDGs) such as SDG7 (Affordable and Clean Energy), SDG8 (Decent Work and Economic Growth), SDG9 (Industry, Innovation and Infrastructure), SDG11 (Sustainable Cities and Communities), SDG12 (Responsible Consumption and Production), SDG13 (Climate Action), SDG14 (Life Below Water), and SDG15 (Life on Land).

In a circular economy, waste and resource use are minimised; the value of products and materials is maintained for as long as possible through good design, durability and repair; and when a product has reached the end of its life, its parts are used again and again to create further useful products. The circular economy often thrives within different business models – sharing schemes for tools, bikes and cars; leasing arrangements for home appliances, bikes, even jeans; repair and remanufacture. It is an alternative to the traditional, linear economy, in which we extract great quantities of natural resources to make things that we may use once only before throwing them away.

At its best, living in a circular economy allows us more access to things which are well-designed and can be shared, reused, repaired and remade; and when we keep manufacture and remanufacture as local as possible we provide local jobs and services with the lightest impact possible on the quality of our water, air, soil and health. In recent times we have seen the value of shorter and more localised supply chains providing for our needs as the fragility of global supply chains has been exposed.

Ireland's waste management policy has long prioritised waste prevention and this has been the starting point for the growth of circular economy thinking. Since 2004, our National Waste Prevention Programme, managed by the Environmental Protection Agency (EPA), has led the way in developing measures and initiatives that have fostered the evolution of policy and practice towards circularity. The current programme captures the place we are now at on that journey. Our national experience has shown we have opportunity and capacity for adopting circularity. Early movers such as the Rediscovery Centre, Recreate Ireland and Dublin Bikes have shown what is possible and have energised and inspired others. More recent initiatives such as Circuléire, a platform for circular manufacturing are building on growing awareness across the industrial sector to embrace the change that must come.

The Challenges

Our goal is to have a circular economy that reduces our carbon impact and protects our natural resources, environment and health. Such a circular economy also supports viable and sustainable enterprise opportunities, jobs and training. It uses the tools of the modern economy in a new way – harnessing the potential of renewable energy, design and the digital economy to create and recreate value. There is no specific timeframe to achieve this other than as soon as possible – as set out above, current global linear consumption patterns are dangerously unsustainable.

To this end, the European Commission's Circular Economy Action Plans 2015 and 2020 have proven valuable guides towards meaningful change. As the legislative revisions agreed in 2018 now enter into force domestically, we need to step up again to engage in new proposals announced in March 2020. The EU has the ambition of achieving climate neutrality by 2050, decoupling economic growth from resource use while maintaining long term competitiveness and leaving no one behind. To fulfil this ambition, the European Commission proposes that the EU needs to accelerate the transition towards a regenerative growth model that gives back to the planet more than it takes, advances towards keeping resource consumption within planetary boundaries and strives to reduce its consumption footprint and double its circular material use rate in the coming decade.

National waste policy has a clear role to play in delivering on these ambitions.

The Second Circular Economy Action Plan (2020) proposes the following specific waste-related measures:

- Waste reduction targets for specific streams and other measures on waste prevention
- EU-wide harmonised model for separate collection of waste and labelling to facilitate separate collection
- Methodologies to track and minimise the presence of substances of concern in recycled materials and articles made thereof
- Harmonised information systems for the presence of substances of concern
- Scoping the development of further EU-wide end-of-waste and by-products criteria
- Revision of the rules on waste shipments to provide greater traceability and ensure that resources are not lost overseas or dumped in third countries with less robust social or environmental protections in place.

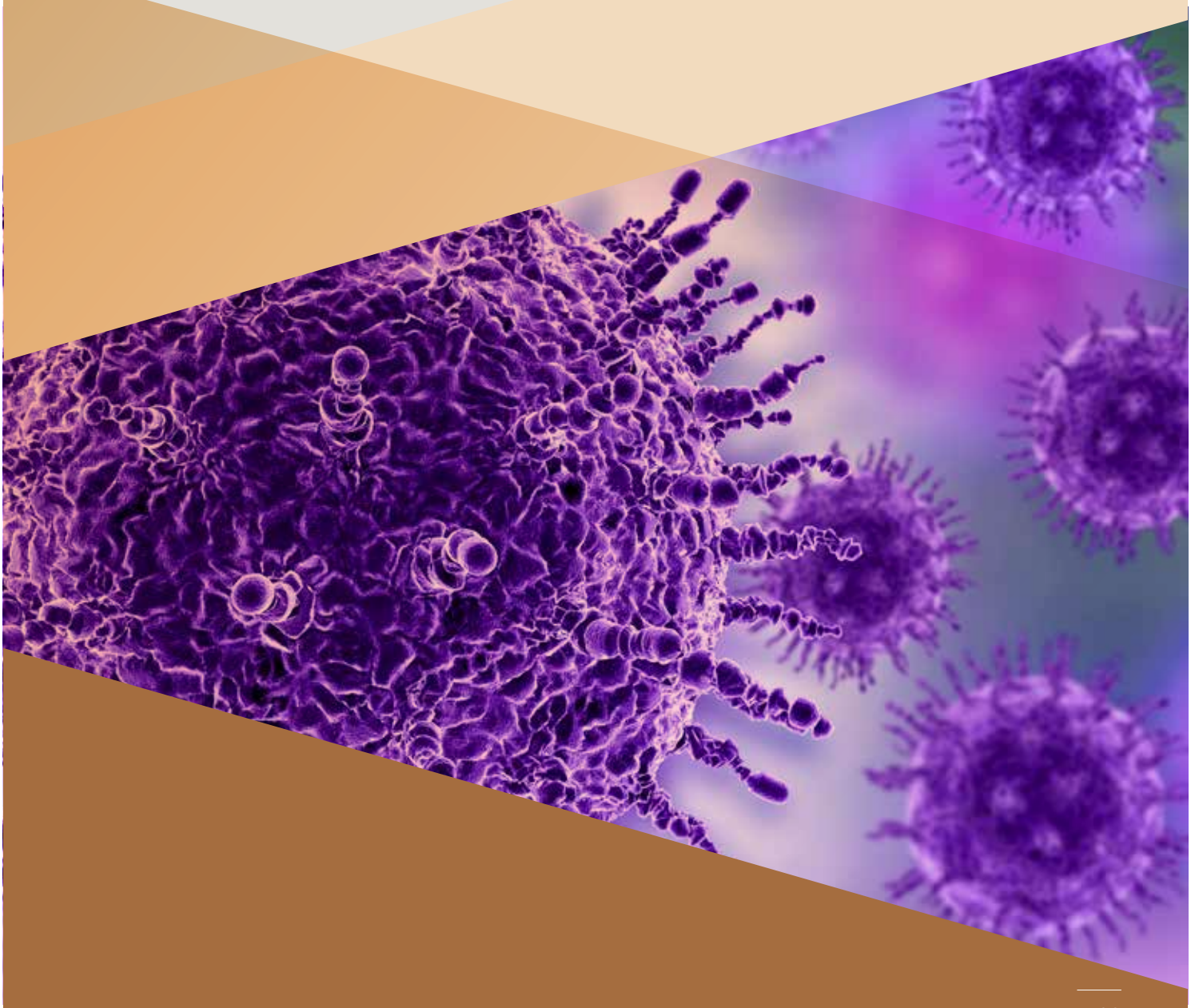
To achieve the overarching objectives set out above however, it is useful to break down the steps that are required to achieve a circular national economy and to set targets for how those steps can be accomplished. This Waste Action Plan will be a founding document in that process. The policy objectives and actions set down here will act as a springboard for wider economic and societal developments in circularity. By prioritising waste prevention principles across every facet of waste policy, this sector will play its role in staunching the flow of valuable resources out of productive use.

Measures to Achieve Optimum Results

- In line with the Programme for Government commitment we will establish a circular economy unit within this Department with a mandate to ensure a whole of government approach to the circular economy.
- One of its first tasks will be the development of a high-level all of government circular economy strategy. This will set a course for Ireland to transition across all sectors and at all levels of government toward circularity. Policy coherence across government will be key to ensuring all policy levers are set towards the same objective.
- We will reconfigure the existing National Waste Prevention Programme to make it Ireland's Circular Economy Programme. Led by the EPA, it will have a designated coordinating role to support the Department's circular economy unit in overseeing national, regional and local activities to improve coherence and alignment of national and local activities and ensure maximum impact.
- Working with the Regional Waste Management Planning Offices and the City and County Management Association we will replace the existing Regional Waste Management Plans with a National Waste Management Plan for a Circular Economy containing targets for:
  - Reuse
  - Repair
  - Resource consumption
  - Reducing contamination levels
- We will establish an interdepartmental Circular Economy Working Group with priority departments.
- We will develop Circular Economy Sectoral Roadmaps that include priority waste prevention targets.
- We will seek to ensure Ireland can maximise supports that are available from the EU, including under the proposed Recovery and Resilience Fund, for circular economy projects for priority sectoral material streams.
- We will support an environmentally ambitious approach at EU level in negotiations on future revisions of waste directives and circular economy initiatives.
- In line with the Programme for Government commitment we will support the Office of Government Procurement in developing and implementing a sustainable procurement model that seeks to minimise the environmental impact and optimise the public benefit of products and services procured.

- We will review objectives and practices of Extended Producer Responsibility (EPR) schemes for capitalising on circularity potential.
- We will raise awareness amongst policy makers and elected representatives as to how circular economy developments can support regional development and jobs.
- We will provide opportunities for the commercial sector to participate in the transition to circularity for example using sectoral pledges for sustainable products and practices.
- We will amend legislation in relation to end-of-waste and by-products to remove barriers to circular economy developments (see chapters on End-of-Waste and By-Products).
- As part of the education and awareness programme outlined later in this document, we will develop a communications strategy around promoting the meaning and potential of a transition to a circular economy.
- Working with other stakeholders we will seek to ensure skills for a circular economy such as design, repair and refurbishment are included in national future skills and Just Transition planning.
- We will advocate for the inclusion of reused and repaired goods in publicly funded initiatives.
- We will expand reuse, repair and sharing supports through the new Circular Economy Programme and other public programmes.
- We will expand public sector and public bodies' role in reuse via Green Public Procurement and Circular Public Procurement setting a minimum target for procurement of used goods.
- We will investigate a national reuse target and press for new EU targets.
- We will explore the role that Ireland's digital sector can play in accelerating our transition to a circular economy.

COVID-19 and the Circular Economy



COVID-19 and the Circular Economy

Given the scale and breadth of its impacts, COVID-19 has made the transition to a circular economy more challenging.

There has been a massive global increase in plastic waste associated with domestic and medical waste from protective equipment such as masks, gowns, gloves and an increased use of sanitary wipes. Much of this is ending up in landfills and waste to energy facilities. More worryingly, some of it is being dumped, ending up in watercourses, washed out to sea, returned days and weeks later to coastal areas.

With many food outlets offering takeaway options only and some cafés and coffee shops refusing to accept reusable cups, plastic waste generated by the food and hospitality sector has risen globally too.

In Ireland, waste collectors have reported significant increases in domestic waste presented for collection. Some of this is thought to be associated with home clear-outs or spring cleaning during the early stages of Ireland's response to COVID-19. In normal circumstances, much of this material would be offered for reuse or resale through charity shops. However, as these shops were closed for an extended period of time, items that might have had second or third productive lives with new owners ended up in the residual bin, ultimately going to either landfill or recovery.

While these setbacks may have complicated the transition to a more circular economy for certain waste streams, in many more ways the COVID-19 pandemic has underscored the need for circularity more than ever before. In early 2020 approximately 2.6 billion people were living under some form of lockdown. More than 50 countries imposed restrictions on the importation of goods. Delivery times increased, the cancellation of passenger flights restricted the availability of air cargo and the costs of air freight have risen dramatically.

While food supply chains within and into Ireland have held up well, the OECD has reported specific issues in keeping global food chains open. Beyond cost and logistical issues, new supply chain challenges have arisen, with food loss and waste through delays and the fall off in demand from the international hospitality sector.

The World Trade Organization has said that "the COVID-19 pandemic represents an unprecedented disruption to the global economy and world trade, as production and consumption are scaled back across the globe".

Workplace and digital revolutions are taking place in terms of remote working and millions of people no longer facing a daily commute. GHG emissions are down and significant improvements in ambient air quality are being reported around the world as individuals and businesses question the business as usual model.

COVID-19 has exposed fragilities within our global economic model. It is causing a rethink throughout the world about the ways we work, the way we produce, transport, buy and consume things.

A transition to a circular economy contains some important answers, for example in terms of:

- the need to design and make products to be repairable, reusable and potentially for remanufacturing (such as ventilators during the current pandemic);
- self-sufficiency and local production / consumption;
- shorter and more resilient supply chains for certain products;
- consumption and production patterns guided by scarcity and necessity; and
- creating local jobs, training and enterprise opportunities using local resources and providing local repair and refurbishment services.

Unprecedented efforts are underway throughout the world to find a vaccine for COVID-19 but the virus is now part of our daily lives and will remain so for the foreseeable future. Living with COVID-19 and transitioning to a circular economy are not mutually exclusive and we do not need to await the eradication of COVID-19 before we embrace circularity.

In fact, our response to the pandemic can accelerate and complement that transition.

Municipal (Household and Commercial) Waste

Municipal (Household and Commercial) Waste

Municipal waste or Municipal Solid Waste (MSW) is the waste we produce in households, and similar waste produced by businesses. Typically, this waste is collected at kerbside and back door, or brought directly to bring banks or civic amenity sites. MSW only amounts to approximately 10% of the waste generated in the EU, but it is complex to manage because it is comprised of a number of streams such as general waste, mixed dry recycling, and organic waste, and it has a large number of producers. Statistical information on municipal waste in Ireland is available on the EPA website.

The management of MSW in Ireland has evolved significantly since the Waste Management Act was introduced in 1996. A number of factors have contributed to this evolution, including changes in international markets and European legislation, changing practices within the waste industry and major institutional reform (including the introduction of Local Authority shared services, the establishment of the Office of Environmental Enforcement within the EPA and the introduction of EPR schemes and the role of environmental NGOs.

In more recent years, government policy has focussed on waste as a resource. According to EPA figures, 23% of MSW was disposed to landfill in 2017 down from 41% in 2012. Moves towards a more circular economy will reinforce this trend.

Ireland has a number of targets under European waste legislation for 2020, including the following MSW targets:

- 50% by weight of household derived paper, metal, plastic, and glass to be prepared for reuse and recycling
- Biodegradable municipal waste going to landfill to be no more than 35% of amounts generated in 1995.

In recent years Ireland has made good progress on meeting our targets. However, we need to do better. Despite recent successes Ireland must continue to make significant improvements in waste prevention and recycling rates in order to meet the new targets for 2025, 2030, and 2035. The MSW recycling rate has remained stubbornly static at 41% from 2012 to 2016, and declined to 40% in 2017, meaning there is still a lot of work to be done to achieve the 2020 target of 50%. In 2017, each person living in Ireland produced, on average, 577 kg of municipal waste, which is well above the European average of 487 kg.

Contamination of bins is a problem, with recent EPA figures indicating that 20% of the material in household recycling bins should not be there, and 70% of the material in general waste bins from the commercial sector should be in recycling or organic

bins. This represents a massive loss of resource value, an unnecessary high cost to households and businesses whose waste charges would be lower through proper segregation, and undermines investment in indigenous treatment capacity.

Improvements in these areas could also yield significant results for our environment. The EPA has estimated that correct use of the three household bins could reduce the volume of the general waste bin by a third, and that municipal recycling (including organic waste for composting and anaerobic digestion through the organic bin) rate could increase by 50% (from 40%). Enhanced segregation by households and the commercial sector will be addressed as a matter of urgency.

Household 'bulky' waste

Household bulky waste is generally understood to be discarded, large household items such as mattresses, furniture or large toys which are too bulky to be collected as part of regular kerbside collection services. Civic Amenity sites provide the main reception facilities for waste of this nature. Social enterprises are active in the areas of mattress recycling, furniture reuse and upcycling however the market is not fully mature enough to allow scaling up for sufficient impact.

There are a number of key issues to be addressed in this area including:

- Bulky waste features prominently in waste dumped illegally around the countryside.
- The lack of infrastructure, specifically facilities to keep legally deposited materials clean and dry and facilities for the storage of large plastic items.

There are options that we will examine to increase the reuse and recycling of these materials:

- Public bodies incorporate reuse policies into their asset management and procurement plans.
- Appropriate reception facilities are provided at civic amenity sites.
- We will promote circular economy design principles for the domestic furniture and mattress industry.
- We will ban bulky waste from landfill.

The Challenge

Recent revisions to the Waste Framework Directive introduced the following recycling targets for MSW:

- 55% by 2025
- 60% by 2030
- 65% by 2035

In addition, the Landfill Directive has been amended to require that by 2035 no more than 10% of MSW goes to landfill.

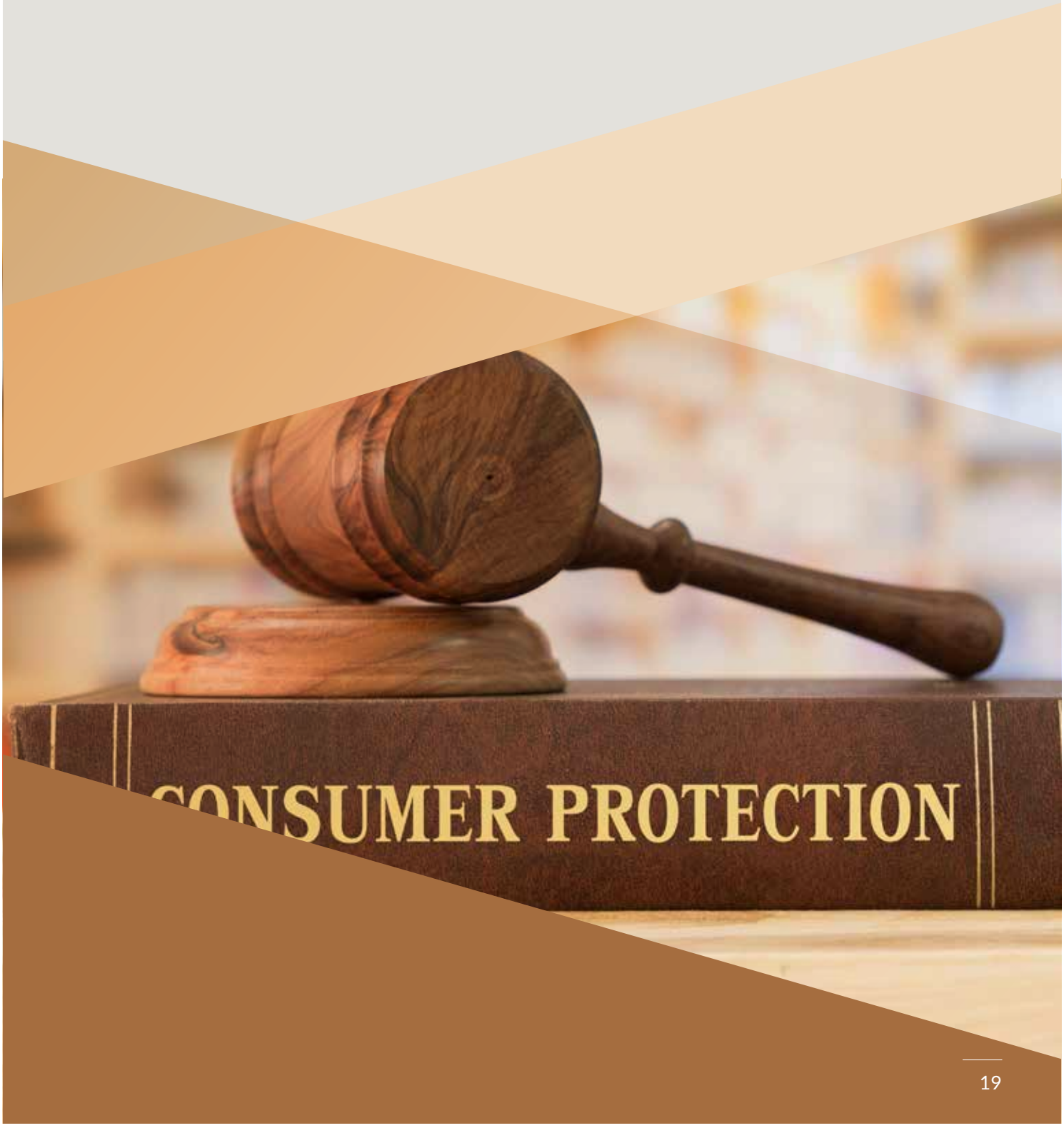
Measures to Achieve Optimum Results

- We will incorporate municipal waste recycling targets as conditions of waste collection permits (i.e. collectors will be required to achieve a 55% recycling rate of municipal waste by 2025, 60% by 2030 and 65% by 2035). The effect of this will be to incentivise the waste industry, in the context of the current market structure, to drive enhanced segregation including for apartment complexes.
- We will work to improve waste segregation in the commercial sector, including an awareness campaign and enforcement actions requiring segregated waste bins and incentivised charging to ensure waste minimisation and proper segregation.
- We will standardise the colour coding of bins across the State on a phased basis (general waste bin to be designated as a 'recovery' bin: colour black; mixed dry recycling bin: colour green; organic waste bin to be designated as 'organic waste recycling bin': colour brown).
- We will introduce a Waste Recovery Levy of €5 per tonne. This will apply to recovery operations at Municipal Solid Waste (MSW) Landfills, Waste to Energy Plants and Co-Incineration Plants and the Export of MSW.
- We will ensure that household and commercial waste management will be an operational and enforcement priority for all stakeholders.
- We will work to deliver sustained and visible public

behavioural change campaigns under uniform branding, targeting individuals, business and the public sector to encourage waste prevention and recycling.

- We will revisit the existing national standardised list of items acceptable in the mixed dry recycling bin with a view to expanding the list to capture more recyclable materials.
- We will examine means to ensure segregated waste receptacles are provided by commercial premises for customers.
- We will introduce further measures to incentivise the prevention and segregation of waste, including for example, reviewing the incentivised charging regime and introducing penalties for those who fail to segregate waste.
- We will work with relevant stakeholders to improve waste segregation in apartment complexes.
- We will make the provision of an organic waste bin mandatory as part of a waste collection service for all households.
- We will develop a quality waste management assurance scheme for businesses (including apartments serviced by management companies) to sign up to. This will verify that premises are complying with best waste management practice in terms of waste prevention and recycling (including organic waste).
- We will work with stakeholders to ensure the waste sector is responsive to emerging trends and best practice in waste collection and treatment options.
- We will work to encourage the rollout and mainstream adoption of mywaste package labelling.

Empowering households and businesses through better consumer protection



Empowering households and businesses through better consumer protection

An effective waste collection market requires a balancing of powers across regulatory bodies (such as LAs and the EPA), the waste collection industry, and their end-users – households and businesses throughout Ireland.

There is no statutory body undertaking whole of market monitoring for waste collection performance or charges. The Price Monitoring Group (PMG) was established to monitor the ongoing cost of residential waste collection to homeowners across Ireland as the 'flat-rate structure' was being phased out. The monitoring is carried out on a monthly basis. Prices are monitored using a mystery-shopper approach to approximately one-third of licensed waste collection firms that operate within the State.

Similarly, no dedicated, statutory customer complaints procedure exists. Under Section 34 of the Waste Management Act a waste collector, other than an LA, must have a permit to collect waste for the purpose of reward, with a view to profit or otherwise in the course of business, and must comply with the conditions of that permit. Waste Collectors must hold a valid waste collection permit issued by the National Waste Collection Permit Office (NWCPO) in order to collect waste. A standard set of conditions is attached to each permit which seeks to govern the activity in a flexible and responsive manner to control waste collection and contribute to the achievement of Regional, National and EU waste objectives.
Among the standard set of conditions is a requirement that all permit holders have in place a "Customer Charter". This is a statement describing the level of service a customer can expect from their household waste collector. Every household waste collector must have a documented "Customer Charter", a copy of which is available on the collector's website and which must include details of the following:

- Customer service standards
- Communication with customers
- Householder responsibilities
- Pricing, charging mechanism and access to account information
- Complaints procedure/dispute resolution
- Education and raising awareness
- Termination of service / refunds / changing service providers
- Changing equipment and ownership of bins.

The National Waste Collection Permit Office (NWCPO) may deal with complaints from customers of household kerbside waste collectors. Between 200 and 250 complaints are received annually and these are processed in accordance with standard protocols. Waste collectors are required to demonstrate to the NWCPO that complaints have been addressed and are incorporated into the audit for a waste collection permit review. This audit examines the complaints system that is in place and the procedures for addressing these complaints. However, the legislation does not require or allow the NWCPO to investigate specific consumer complaints (for example, in relation to alleged over-charging etc.).

The structure of Ireland's collection market was also considered by the Waste Advisory Group. This sets out a number of important conclusions as follows:

- The professionalisation of the waste sector in Ireland over recent decades has been a key factor in driving improved overall performance.
- Current market structures may have advantages in terms of value for money and flexibility.
- However, other systems may offer greater control for regulators in terms of achieving guaranteed performance levels. While improvements have been made (through, for example, the introduction of Customer Charters), the consumer is in a relatively weak position because a dedicated, statutory complaints procedure for the waste sector does not exist and it can be difficult for households and businesses to compare pricing structures and track their waste collection charges.

The Challenge

To build on the progress made over recent decades we must improve consumer protection and enhance customer service. We will achieve this through ongoing monitoring of the market and the establishment of a formal complaints resolutions procedure. Customer service charters will be strengthened and will be

enforceable. The provision of accurate, timely and clear pricing plans will become standard as they are with other utility providers and waste collection firms will be mandated to ensure they provide accurate and timely pricing information to the public when requested by the public or by regulatory authorities.

Measures to Achieve Optimum Results

- We will expand the role of the NWCPO to become a collection market oversight body with the following roles:
  - Data analysis on the operation of the market
  - Oversight of charging structures and penalties
  - Oversight of service provision
  - Management of consumer rights and a complaint escalation mechanism
  - Data protection
- The role of the Price Monitoring Group (PMG) will be expanded to monitor more of the market and to examine whether fair and transparent pricing is consistent in the market and how is it disclosed to customers. Data collected by the PMG will be a critical input to the data analysis role to be undertaken by the NWCPO.
- We will review existing incentivised charging systems with a view to standardising these systems and ensuring that they incentivise waste prevention and recycling.
- We will require waste collectors to ensure staff are fully trained to provide accurate pricing information to the public.
- We will strengthen the current customer service charter with appropriate penalties for non-compliance, including fines.
- Householders and businesses will be facilitated to easily access their waste data and pricing plan to allow for comparison with other collectors.
- We will require waste collection firms to ensure they provide accurate and timely pricing information to the public over the phone and/or on their websites.

Food Waste

Food Waste

Food is fundamental to our existence and is bound up in our culture, psychology and values. Our systems of food production and the nature of our food consumption patterns have extensive circular economy implications in terms of the carbon footprint of global supply chains, resources used in delivering food to our plates and the extent of food that is wasted at the end of this chain.

Why we waste food is complicated and the reasons can be personal, cultural and economic. As a result, if we want to reduce the amount of food waste, a number of complementary approaches are needed.

Food waste can be defined as 'any food, and inedible parts of food, removed from the food supply chain to be recovered or disposed (including composted, crops ploughed in/not harvested, anaerobic digestion, bio-energy production, co-generation, incineration, disposal to sewer, landfill or discarded to sea'. We can also think of this as 'food that is not eaten by people'.

Ireland generates approximately 1 million tonnes of food waste per year (not including wasted food from agriculture), which represents a carbon footprint as high as 3.6 Mt CO2eq. Around 40% of this comes from food processing operations, while 60% of it comes from the household and commercial sector.

Wasted food is a global issue because:

- The high level of embedded resources such as land, water, fertilizers, fuels used in growing, harvesting, processing, packaging, transporting and storing food are wasted.
- There is an ethical problem when food is wasted where food poverty persists for some citizens.
- Wasted food and its packaging require appropriate segregation, collection and processing which all consume resources. Disposal at landfill releases methane, a GHG many times more potent than carbon, into the atmosphere.
- Regulatory oversight of food production and the disposal of wasted food (education and awareness, regulation of waste management etc.) impose costs on the public purse.

The urgency and challenge of addressing food waste is highlighted at international level through Goal 12.3 of the UN SDGs: "By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains". The United Nations estimates that one third of food produced for human consumption in the world is wasted. The US-based Climate Action 'Drawdown Project' recognises reducing food waste as the third greatest opportunity that we have to reverse global warming.

The 2015 European Commission's Circular Economy package shares this aim, requiring an EU-wide food waste reduction of 30% by 2025 and 50% by 2030, identifying food waste as one of five priority sectors. The revised Waste Framework Directive (2018/851/EC) now explicitly requires that "Member States shall adopt specific food waste prevention programmes within their waste prevention programmes". More recently, in the Second Circular Economy Action Plan the European Commission proposes a food waste reduction target via its 'Farm to Fork Strategy'.

At a national level, food waste is identified as a priority waste stream within the National Waste Prevention Programme managed by the EPA and in recent years increased resources have been assigned to the area

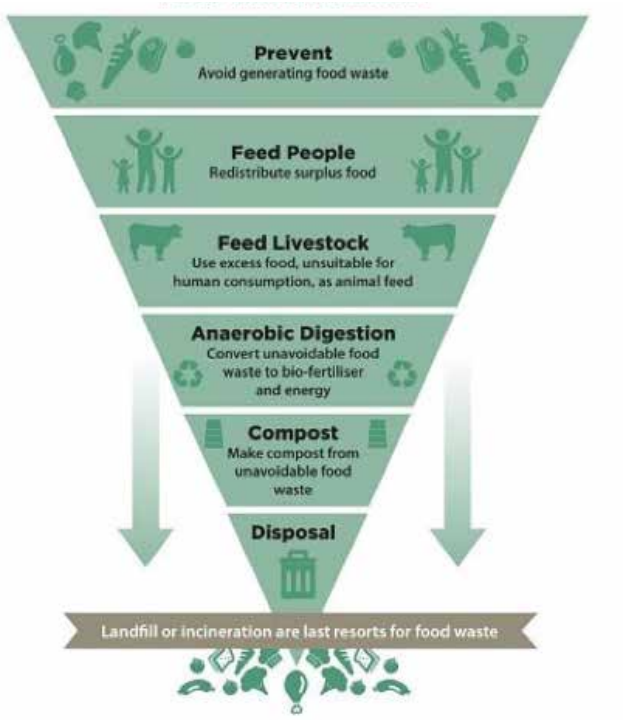
in recognition of its strategic importance. Ireland's previous waste management policy 'A Resource Opportunity' (2012) considers food waste from the perspective of disposal only. The 2019 Climate Action Plan has endorsed both UN and EU ambitions around reducing waste by 50%, but does not propose specific actions.

The Food Waste Hierarchy

The following waste hierarchy sets out the priority order in food waste prevention and management:

- Prevention - avoid generating food waste
- Feed People - redistribute surplus food
- Feed livestock – use excess food, unsuitable for human consumption as animal feed where appropriate and in accordance with feed safety regulations
- Anaerobic Digestion – convert unavoidable food waste to bio-fertiliser and energy
- Compost – make compost from unavoidable food waste
- Disposal – landfill or incineration are last resorts for food waste

Figure 2: The Food Waste Hierarchy



Source:EPA

We will adopt the food waste hierarchy set out above as a priority order in food waste prevention and management.

The Challenge

The international community has recognised the scale and impact of the food waste problem and, as stated above, has reflected its commitment to action in Goal 12.3 of the UN SDGs.

The EU Circular Economy Action Plans (2015 and 2020) endorse this goal and identify food waste amongst its priority sectors.

The European Commission's 2020 Farm-to Fork Strategy proposes 27 measures to increase the sustainability of food distribution and consumption including specific food waste reduction measures:

- By Q4 2022 to bring forward a proposal for revision of EU rules on date marking of foods (Use By/Best Before);
- In 2023 to bring forward EU level targets for food waste reduction based on data collected from Member States in preceding years.

For many years, the EU has required its Member States to collect and submit waste statistics to the European statistics office Eurostat. Under recent changes to EU waste laws, from 2020 Member States are required to gather data on food waste across the value chain, including from primary production; processing and manufacturing; retail and other distribution of food; restaurants; food services; and households. These statistics must be submitted to Eurostat from 2021. Based on these statistics, the European Commission will propose a food waste reduction target to the Member States for negotiation and agreement.

The government is committed to UN and EU targets and re-affirmed this commitment in the Climate Action Plan 2019. The government recognises the importance of integrating food waste reduction policies across climate action, agri-food and enterprise policies in particular. Ireland shares the increased ambition and drive for success in preventing food waste on a collaborative basis across the European Union. Our

participation in the EU Platform on Food Losses has provided many opportunities to share experience, and develop new insights into the issue.

Measures to Achieve Optimum Results

- We will continue to play a leading role at EU level, working with other Member States to agree targets and sectoral priorities that provide a pathway to achieving one of the goals of SDG12 in reducing food waste by 50% by 2030.
- Working with other stakeholders including the EPA we will prioritise data collection (in particular in relation to commercial food waste) to enable us to focus interventions and ensure the accuracy and timeliness of food waste data. Data relating to commercial food waste is vital to our analysis.

Prevention

- We will work with a range of stakeholders to develop a Food Waste Prevention Roadmap that sets out a series of actions to deliver the reductions necessary to halve our food waste by 2030, meet any other related targets, and promote our transition to a circular economy. Government and public bodies will be obliged to take account of the food waste hierarchy in designing and implementing policy measures.
- We will continue to commit resources nationally to the prevention of food waste and to the regulation of optimal food waste collection and treatment practices.
- Through our agencies and public sector partners, we will support innovative pilot projects to trial solutions to some of the challenges of preventing food waste.
- We will incorporate food waste prevention and management into the Green Government programme so that the public sector becomes a leader on food waste prevention.
- The Department of Agriculture and the Marine (DAFM) is the Irish Government lead on SDG 12.3 and we will work closely with that department to pursue ambitious food waste reductions and other measures that contribute towards a sustainable food chain in the Agri-Food Sector. We will work with DAFM to pursue the relevant objectives of the EU's 'Farm to Fork Strategy' and in our national Strategy for the Development of the Organic Food Sector 2019-2025. We will work with the public sector and public procurement specialists to ensure public bodies are supported in their efforts to prevent food waste and manage unavoidable waste through green public procurement.
- We will work with key business sectors to ensure they play their part in not only reducing the waste that arises at the point of sale, but also collateral waste that occurs lower down and higher up the food chain on farms, in food production and in our homes.
- We will work with the Retail Sector Action Group on Preventing Food in the Supply Chain.
- We will support the design and roll out of packaging developed by retailers and the packaging industry that meets the needs of food preservation without encouraging the generation of packaging waste, especially plastic packaging.
- We will work with retailers to end the sale of multi-buy packs to prevent over-buying by consumers.

Redistribution and Infrastructure

- Using the EPA's Food Waste Charter, we will support a voluntary target with retailers and the processing industry for a percentage of edible food to be donated.
- We will support food donation and investigate ways to simplify food donation for business.
- We will investigate the potential impact of a prohibition on the destruction of edible food in advance of its 'use by' date.
- We will investigate the regulatory and legal barriers to 'Good Samaritan' acts of donation and whether mandatory donation of edible food from retail outlets would reduce food waste.
- We want to realise the Anaerobic Digestion (AD) and composting potential of the food waste resource. AD and composting provide opportunities for regional development with benefits for communities through sales of locally generated energy and compost.

Food Waste Management

- We will use National Waste Collection Permit Office and other 'brown bin' data to develop strategies and investigate how new technology can support greater usage.
- We will analyse the impact of the landfill levy exemption for bio-waste and whether it should be removed.
- Through changes to waste collection permits, and working with the Local Authority sector, we will ensure that every householder and business has access to a reliable, clean and sustainable way of managing food waste.
- We will work with the Department of Housing, Planning and Local Government to make regulatory changes in planning and tenancy laws required to ensure apartment dwellers are provided with infrastructure to support food waste segregation.

Plastic and Packaging Waste

Plastic and Packaging Waste

Packaging is defined in EU and national legislation and includes individual sales packaging, grouped packaging and transport packaging. Under EU legislation, Ireland must achieve recycling targets for the following packaging types: glass, plastic, paper and board, metals and wood. Ireland met all EU targets for recycling and recovery of packaging waste in 2018. Our recycling rate is 64%. Recycling of packaging waste is good for the environment because considerable resources and energy are used to produce the various packaging material streams. For example, products made from recycled aluminium use 95% less energy than those made using virgin material.

According to 2018 data, our recovery rate for packaging waste was 91%. This means that in addition to the 663,322 tonnes of packaging waste that were recycled, 282,866 tonnes of packaging waste were sent for recovery at either waste recovery facilities or cement kilns that incinerate packaging material to generate energy. Energy recovery avoids the emissions associated with disposal of packaging waste at landfill. In the case of cement kilns, energy recovery avoids burning of fossil fuels by substituting packaging waste materials as a fuel source.

The Challenge

Table 1: Our EU Targets for Packaging and Recycling by 2025 and 2030

All Packaging Recovery and Recycling Targets		
	By 2025	By 2030
Recovery	Nil	Nil
Recycling	65%	70%
Material Specific Recycling Targets (and prepared for reuse from 2025)		
Materials	**By 2025**	**By 2030**
Glass	70%	75%
Paper and Cardboard	75%	85%
Metal	70%	80%
Plastic	50%	55%
Wood	25%	30%
Aluminium	50%	60%
Packaging	65%	70%

Figures for 2018 and previous years show that we have consistently met and exceeded all our packaging targets through the successful use of the EPR model. However, EU statistics highlight that Ireland appears to generate more plastic packaging per capita than all other Member States. Repak acts under Ministerial approval as a national compliance scheme for packaging. Currently producers can comply with their packaging obligations through self-compliance or becoming a member of an approved compliance scheme. However, there is great scope for improved performance in recycling. Almost two thirds of plastic packaging is not on the current recycling list.

Measures to Achieve Optimum Results

- In order to continue our progression and attain the EU packaging, recovery and recycling targets, we will introduce national targets for packaging compliance schemes within their approvals. These will include stretch targets to advance timeframes and position Ireland as a frontrunner within the EU.
- We will set specific packaging format/product targets e.g. beverage and food cartons.
- In line with the Programme for Government commitment, we will end self-compliance as an option under EPR. This will facilitate the mandatory introduction of EPR for all packaging producers before the 2024 EU deadline and will mean all producers will be liable for the eco-modulation of fees, (i.e. recyclable packaging will have lower fees and non-recyclable, composite packaging and over-packaging will be heavily penalised).
- We will introduce a deposit and return scheme for plastic bottles and aluminium cans (further details can to be found in Chapter 9).
- We will ensure that Ireland achieves the packaging objectives within the Circular Economy Action Plan and the Plastic Strategy by ensuring that all packaging on the Irish market is reusable or recyclable in an economically viable way by 2030.
- As part of our implementation of the EU Circular Economy Action Plan and proposals for mandatory requirements for recycled content of packaging materials, we will examine measures to support increased use of recycled materials in packaging, including the introduction of a virgin plastic levy.
- We will support an environmentally ambitious approach in discussions with the European Commission as a review of the essential requirements for packaging is progressed. Our focus will be on:
  - reducing (over)packaging and packaging waste, by various waste prevention measures including the setting of specific targets;
  - driving design for reuse and recyclability of packaging, including considering restrictions on the use of some packaging materials for certain applications, in particular where alternative reusable products or systems are possible or consumer goods can be handled safely without packaging;
  - seeking to reduce the complexity of packaging materials, including the number of materials and polymers used; and
  - working with all stakeholders and considering the Commission EPR Guidance (which will issue in 2020) to deliver a review of the existing packaging EPR system in Ireland. This will address topics such as eco-modulation of fees, reporting requirements, the de minimis rule and the role of distance sellers etc. with a view to enhancing harmonisation and transparency.
- Producers will be made liable for a minimum of 80% of the costs associated with the waste management of the amount of packaging they place on the market;
- Producers of certain SUP packaging items will also be liable for the costs associated with the litter clean- up of the products they place on the market.
- We will work to reduce contamination levels in recycling bins.
- We will work with packaging suppliers to ensure they play their part in reducing primary, secondary and tertiary packaging waste arising and ensuring that all packaging on the market is reusable or recyclable in an economically viable way by 2030. As part of this process we will examine why Ireland appears to generate a higher amount of plastic packaging compared to other Member States.
- As part of the education and awareness programme outlined later in this document when we look at Citizen Engagement we will:
  - promote plastic and packaging as an urgent public issue (how to prevent it e.g. by choosing packaging free products) and how to handle the packaging waste that arises; and
  - raise consumer awareness on the benefits of use of reusable containers and work with retailers to encourage the provision of refill options.

- We will collaborate with the FSAI on food contact packaging in terms of reuse acknowledging the health and safety requirement.
- We will continue to develop mywaste.ie as the communication tool to join up all stakeholders operating in this space that communicate to the public ensuring the delivery of a consistent and continuous national message.
- We will utilise communication messaging to demonstrate how Local Authority areas are performing in respect of national targets.
- We will examine how segregated waste and recycling bins using uniform labelling could be provided on street, and at public events and festivals.
- We will continue to work with the Regional Waste Management Planning Offices (RWMPO) in the continued promotion of the mywaste.ie recycling labels to develop a unified approach to labels and standards for citizens to easily understand what packaging goes where.
- We will utilise national and EU funding streams for research into plastic and packaging including:
  - research into materials being exported overseas; and
  - research and identification/development of opportunities for reuse/recyclable alternative (packaging) materials.

Single Use Plastics

Single Use Plastics

A single use plastic (SUP) is a product that is made wholly or partly from plastic and which is used only once before being disposed of. These products have become more common as we shift further towards an "on-the-go" society. Many of these items are packaging such as plastic bottles, food containers, coffee cups, and soft drinks containers. $80 - $120 billion is lost annually to the global economy through the loss of plastic packaging material in single use plastics and only 5% of material value is retained for further use. Apart from the environmental benefits (including GHG savings), reducing SUP would cut this overall loss by keeping valuable material resources in circulation and pushing manufacturers towards value capture: reduced packaging (therefore lowering costs) or fully recyclable, reusable or returnable packaging. Ireland could also position itself to lead innovation in this area with clear policy incentives (for example, further economic instruments or prohibition of certain material types).

Ireland is committed to tackling the environmental degradation caused by SUPs and plastic packaging in general. We have supported the introduction of measures to deal with this at EU level and have committed to achieving and exceeding the challenges for Member States that have been agreed at EU level.

There are two significant pieces of EU legislation to guide our ambition in relation to these products:

1. Directive 94/62/EC on packaging and packaging waste, commonly referred to as the Packaging Directive.
2. Directive (EU) 2019/904 on the reduction of the impact of certain plastic products on the environment, commonly referred to as the Single Use Plastics Directive (SUPD).

The SUP Directive aims to deal with the items which represent in excess of 70% of marine litter. In line with the EU's European Strategy for Plastics in a Circular Economy this directive promotes circular approaches that give priority to sustainable and non-toxic reusable products and reuse systems. It therefore aims first and foremost to reduce the quantity of waste generated in line with the pinnacle of the waste hierarchy. This directive was negotiated and agreed very quickly, indicating the desire of all EU Member States to tackle this endemic scourge. It is a wide ranging directive which will undoubtedly present challenges. However, it leaves Member States with the autonomy to choose how best to achieve the minimum requirements and be ambitious to exceed them.

The Challenge

Under our transposition of the SUP Directive, the following SUP items will be banned from being placed on the Irish market from 3 July 2021:

- Cotton Bud Sticks
- Cutlery
- Plates
- Stirrers
- Chopsticks
- Straws
- Expanded polystyrene single use food and beverage containers
- All oxo-degradable plastic products

In addition, under the SUPD, any beverage container (bottles, cartons etc.) up to 3 litres in size will be banned from the Irish market from 3 July 2024 unless its cap is attached to the main part of the container. Beverage producers will also be prohibited from placing any SUP polyethylene terephthalate (PET) bottle up to 3 litres in size on the Irish market from January 2025 unless it contains a minimum of 25% recycled plastic. They will also be prohibited from placing any SUP bottle up to 3 litres in size on the Irish market from January 2030 unless it contains a minimum of 30% recycled plastic.

By 5 January 2023, producers of packaging will also be required to cover the costs of litter clean up associated with the following SUP items:

- food containers
- packets
- wrappers
- beverage containers
- cups
- light weight carrier bags

By 5 January 2023, producers of tobacco products which contain plastic will be subject to an EPR scheme. By 31 December 2024 producers of balloons, wet wipes and fishing gear will be subject to an EPR scheme.

Measures to Achieve Optimum Results

- We will introduce a deposit and return scheme for plastic bottles and aluminium cans. In delivering this, we will work closely with the food and drink industries, retailers, waste collectors and treatment facilities, and our colleagues in Northern Ireland.
- This will be delivered via the following steps:
  1. Public consultation on design options (Q3 2020)
  2. Public consultation on preferred model and draft regulations (Q1 2021)
  3. Commencement of underpinning legislation (Q3 2021)
  4. Introduction of scheme (Q3 2022)
- The legislative basis for the delivery of a DRS scheme will provided through the transposition of the Single Use Plastics Directive (3 July 2021).
- In line with the requirements of the SUPD we will introduce EPR requirements for:
  - tobacco products;
  - balloons;
  - wet wipes (those not subject to an outright ban); and
  - fishing gear.
- We will significantly reduce the amount of SUPs being placed on the market by 2026 (relative to 2022) and will develop an action plan by July 2021 for doing this.
- We will continue to work with the Office of Government Procurement to ensure public bodies are fully supported in their efforts to avoid single use plastics consumables.
- We will implement an 'on request' policy for single use plastics for food and beverages.
- While Member States are prohibited from banning packaging from being placed on the market, the SUP Directive does give discretion to ban packaging items under a notifiable procedure in accordance with Directive (EU) 2015/1535. Using this mechanism we are committed to banning a further range of SUP items to include but not limited to the following:
  - Wet wipes (non-medical)
  - SUP hotel toiletries
  - SUP sugar and condiment items.

Coffee Cups

22,000 coffee cups are disposed of in Ireland every day, equivalent to a rate of 6 per second, 200 million annually in Ireland and 500 billion globally. Reusable alternatives already exist for take-away coffee cups – this is an entirely avoidable, preventable waste stream and encapsulates the role of personal choice in effecting the transition to a circular economy. Working with the EPA and eNGOs including the Conscious Cup Campaign, we will work over time towards the elimination of this waste stream through the following actions:

- Introduction of the so-called "latte levy": A consultation paper was published by the

Department in late 2019 which outlined proposals with regard to environmental levies, including on these products. This is available on the Department's website.
- Trialling the elimination of coffee cups entirely in selected towns, Higher Education Institutions and other transport/commercial centres.
- The introduction of measures to ban their unnecessary use (such as sit-in cafés) and to oblige retailers to give a price reduction to consumers who use reusable cups.
- Education and awareness programmes.
- An eventual full ban on disposable cups.

Cold Drinks Cups

Disposable cold drinks cups are a particular challenge in Ireland as the reusable culture has not made its way as easily into the fast food sector and, more importantly into takeaway beverage cups which are different to coffee cups because they traditionally use a straw. Recent initiatives at sports events at which only reusable cups have been provided are welcome and provide clear examples of how this waste stream can also be eliminated through a blend of incentive and education.

- To tackle the proliferation of disposable cold drinks cups we will work across government to examine the licensing of large scale events where plastic cups (without lids and straws) are used for cold drinks with a view to mandating specific conditions prohibiting the use of disposable cold drinks cups.
- We will develop proposals for a levy on cold drinks cups, in line with the latte levy.
- We will work with stakeholders (e.g. IBEC, Restaurants Association of Ireland, ISME) to promote reusable alternatives.
- We will legislate to ban their unnecessary use (such as sit-in cafés) and to oblige retailers to give a reduction to consumers who use reusable cups.

Food Containers

Food containers, as defined under the SUPD, also present a complex challenge given the range of products and packaging types associated with them. Food containers are prevalent in the fast food and retail sectors as well as garage forecourts, cafés, restaurants. There is no "one size fits all" in terms of reusable options for the myriad of food containers on the market, further complicated by the fact that replacement options must meet food grade quality. Work is underway at present, with our EU colleagues, to identify the food containers for which consumption reduction measures should be introduced in Ireland.

- We will impose environmental levies on food containers (as with coffee cups and cold drinks cups).
- We will work with stakeholders (e.g. IBEC, RAI, ISME, EPA) to research and promote reusable alternatives.
- We will work across government to examine the licensing of large scale events with a view to mandating specific conditions prohibiting the use of non-reusable food containers.
- We will legislate to ban their unnecessary use (such as sit-in cafés).

Citizen Engagement- Raising Awareness, Education and Behavioural Change

Citizen Engagement- Raising Awareness, Education and Behavioural Change

Transition to a circular economy and its associated behavioural change will require action from all sectors of society. Positive practices and behaviours will need to be promoted while 'bad habits'- built up over many years- will need to be discouraged or prohibited. Part of our task is to connect individual waste management practices and behaviours to mitigating the effects of climate change while translating the principles of the circular economy into meaningful, practical actions for households, businesses and individuals.

Society needs to reverse its tendency towards quick disposal of goods. Improved economic conditions can lead to a seemingly endless pursuit of material goods. This needs to be offset by a return to traditional consumption patterns to include reuse, repair and exchange.

The Challenge

The government is very aware of the importance of effective communications in the drive to implement behavioural change. To this end we established a Waste Communications Strategy Group to better coordinate various communications campaigns targeted at households and businesses. More recently and particularly in the context of COVID-19, there is a growing public awareness on environmental issues, presenting an opportunity to promote behavioural change. We will work to build on progress made to date by the EPA's National Waste Prevention Programme in particular StopFoodWaste.ie and the mywaste.ie portal run by the LAs. In undertaking this task we need to strike a balance between effective communications and avoiding information overload.

Measures to Achieve Optimum Results

- A new national communications and education programme will be initiated, building on the work done to date through the Waste Communications Strategy Group and the Waste Advisory Group.
- A working mix of incentivisation and enforcement may be required to increase good behaviour, and the benefits of changed behaviour must be emphasised. All messaging must be evidence based to be effective.
- Current standards of labelling, in providing information to consumers, need to be improved and products should carry a message on how they should be dealt with at end of life. The input of product manufacturers nationally and at EU level will be required if this is to be effective.
- Using a ground-up approach, new channels of engagement will be considered, for example the workplace and community-based networks.
- We will examine current environmental schemes and concepts, including Extended Producer Responsibility and Green Public Procurement, to assist in effecting behavioural change.
- We will continue to consult and engage with the public, industry and other stakeholders in a timely way when designing new policies and interventions to ensure their effectiveness.

Construction and Demolition Waste

Construction and Demolition Waste

Construction and demolition (C&D) waste is waste from any building works, demolition and development (including transport infrastructure). In 2017, almost 5 million tonnes of C&D waste were collected by authorised waste collectors. Excavated soil and stone is the largest element of construction and demolition waste at approximately 80%. The remainder includes concrete, brick, tiles, metal, glass, wood, plastic and metal. This represents a huge cost and loss of value to the construction sector as well as resulting in significant volumes of avoidable waste. C&D waste is the largest waste stream in the EU representing approximately one third of all waste produced. Management of C&D waste therefore poses a major challenge to both the construction and waste industries. However, improvements in C&D waste management practices can also offer many opportunities in terms of reduced environmental and financial costs to the industry and to society.

After a period of low activity during the 2008 to 2011 recession, construction activity has been accelerating in recent years in line with the upturn in the economy, especially in the greater Dublin area. Project Ireland 2040 sets out the State's ambition and vision in terms of development over the next 20 years. The plan includes a number of major construction projects which present huge potential in terms of preventing and recycling construction waste and a challenge in terms of ensuring we have the ability to manage the waste generated. If the State is to meet the targets as set out in the National Development Plan 2018-2027, it is vital that there is sufficient capacity for the recovery and/or disposal of the envisaged increased construction and demolition waste. From a broader circular economy perspective however, it is even more important that prevention and reuse is hardwired into construction activity.

Table 2: Construction and Demolition Projections 2020 – 2022 (Based on projections produced by Regional Waste Management Planning Offices December 2019)

	2020	2021	2022
Total C & D waste	6,410,000	6,570,000	6,930,00
Of which soil & stone	5,000,000	5,130,000	5,410,000

In 2018 the Department established a Construction Waste Resource Group comprising key stakeholders from the C&D sector as well as waste sector stakeholders. The group also includes policy, regulatory and industry representatives to provide a useful platform to discuss and monitor C&D waste issues arising, including the capacity and potential of the sector to prevent, recycle and manage C&D waste. Arising from the valuable work of this Group, which continued in 2019, significant progress has been made on a number of issues of concern to the sector, including the production by the EPA of guidance on soil and stone as a by-product, progress on a number of end-of-waste applications by the EPA and doubling the volume of material which can be accepted for treatment under a waste facility permit. The Group has produced several recommendations for further improvements in the sector which will now be progressed by the Department, EPA and other relevant

stakeholders. Arising from discussions held at the first meeting four subgroups were formed to deal with specific issues of importance:

- Article 27/End-of-Waste/ Permit threshold limits
- Capacity / Projections
- Waste prevention/Best practice on site/ Circular economy
- Enforcement/Waste flows

We will continue the work of the subgroups to deliver on the identified aims, feeding into the over-arching objectives of the Construction Waste Resource Group. The work of implementing the recommendations produced by the subgroups will continue to support the embedding of circular economy principles in waste management in the sector.

The Challenge

Over the coming years, the sector needs to:

- Promote waste prevention in the first instance;
- Follow best available techniques;
- Expand the range and use of recycled products;
- Create a market demand for recycled products and segregating more material on-site to allow for recycling; and
- Meet the target of preparing for reuse, recycling and other material recovery (incl. beneficial backfilling operations using waste as a substitute) of 70% by weight of C&D non-hazardous waste (excluding natural soils & stone).

There is a need to plan for C&D waste management at the earliest possible stage in a construction project, ideally at concept stage. The EPA National Waste Prevention Programme has gathered a list of resources for waste prevention and best practice on C&D waste **on the EPA website**.

Measures to Achieve Optimum Results

- We will continue to implement measures to promote best practice, track waste flows and strengthen enforcement as recommended by the Construction Waste Resource Group. Promotion of best practice will include a 'best available techniques' document for the sector.
- Working with other stakeholders we will seek national end-of-waste decisions for specific C&D waste streams (see Chapter 15).
- We will develop detailed guidance on the Article 27 by-product process for a number of specific construction and demolition materials.
- We will complete the revision of the 2006 Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Waste Projects and work with the Department of Housing, Planning and Local Government to bring C&D waste ultimately within the framework of statutory planning guidelines.
- C&D waste management plan guidelines will be updated and we will ensure that there is a consistent application of planning requirements.
- We will put in place incentives to encourage the use of recycled materials including examining a possible levy on the use of virgin aggregates in construction projects to incentivise the use of recycled C&D materials, or build thresholds into Green Public Procurement.
- In line with relevant Programme for Government commitments we will continue to work with stakeholders such as the Office of Government Procurement, the EPA, the Sustainable Energy Authority of Ireland (SEAI) and the Department of Public Expenditure and Reform (DPER) to expand the inclusion of green criteria in procurement.
- We will develop reuse and recovery targets for plastic from the construction and demolition sector.
- We will examine methods to encourage source segregation of waste materials on site which could include moving away from the use of mixed skips or incentivised pricing or other financial instruments to support segregation.
- Working with the LAs, we will develop guidance on crushed concrete and road planings.
- To improve consistency across the sector and to improve data gathering we will look to standardise waste dockets. New dockets should be future proofed by considering, but not limited to, the use of a barcoded electronic docket tracking system for the movement of waste.

- We will make regulatory changes to allow for the issue of Fixed Payment Notices to waste facilities/Certificate of Registration (CoR) /Waste Facility Permits (WFP) sites that do not submit a completed Annual Environmental Report (AER) or submit inaccurate AERs.
- We will support training to roll out the implementation of best practice across the sector.

Textiles

Textiles

Textiles are products of clothing, footwear and interior furnishings (e.g. carpets, curtains, bedding, furniture) composed of at least 80% by weight of textile fibres (based on EU textile labelling regulation 2011). The production of textiles has one of the most complex global value chains, involving millions of producers and billions of consumers worldwide. Since 1975, the global production of textile fibres has almost tripled and over the past decade clothing prices have fallen relative to inflation. Lower prices and greater variety and availability of clothing have resulted in consumers buying many more items of clothing, a phenomenon known as 'fast fashion'. Between 1996 and 2012, it has been estimated that the amount of clothes bought per person in the EU increased by 40% and more than 30% of clothes have not been worn for at least a year. EU citizens were estimated in 2017 to consume nearly 26kg of textiles per person per year, of which around 11kg were discarded, often ending up in mixed household waste sent to incinerators or landfill. It is estimated that less than 1% of all textiles worldwide are recycled into new textiles as technologies to recycle textiles into virgin fibres are only starting to emerge.

Post-consumer textiles are managed as waste and non-waste, depending on the intention of the person passing them on and where they are presented. This adds to the challenge of understanding the nature and extent of textiles and textile waste. Textile wastes are put in kerbside household bins, brought to civic amenity sites or arise from commercial and industrial activities such as manufacturing, hospitality, healthcare and laundry services.

Textiles donated for reuse to charity shops, bring banks and commercial shops offering take back schemes are not classed as waste at the point where they are accepted. Being outside the waste management regime, textiles arising from these reuse pathways are not easily quantifiable and textiles donated for reuse where unsuitable for reuse, being soiled or too worn, may end up being treated as waste.

The Irish Charity Shop Association represents 450 shops operating nationwide. It estimates that its members handle about 23,000 tonnes of textiles each year. 12,000 tonnes of this are sold as garments for reuse (translating to an estimated 11 million garments) with the remaining 11,000 tonnes unsuitable for sale and sold to commercial textile recyclers. It is estimated that up to 4,000 commercial clothes collection points or bring banks are operated nationwide.
Most garments collected here are understood to be exported to other markets.

Within the waste collection system, the 2018 Waste Characterisation Study found that within the household waste profile, textiles (excluding nappies) made up:

- 10% of our general waste bin; and
- 3% of our recycling bin.

The study went on to generate a national kerbside household waste composition profile and estimated the annual volume of textiles in the waste collection stream, excluding nappies and healthcare textiles, is approximately 63,000 tonnes.

To improve our understanding of the nature and extent

of post-consumer textiles, the EPA, as part of the National Waste Prevention Plan, has commissioned a study on the nature and extent of this material stream in Ireland. The study is set to be completed by end 2020.

The Challenge

According to the European Environment Agency in 2019, the supply chain pressures from textiles is the fourth highest for use of primary raw materials and water, after food, housing and transport, and the fifth highest for greenhouse gas emissions. The European Union has recognised the significance of textiles production and consumption for the environment. Following revision of the Waste Framework Directive in 2018, Member States are required to ensure the separate collection of textile waste by 2025 at the latest. The European Commission will provide guidance to achieve high levels of separate collection of textile waste. The Commission will also decide, by the end of 2024, whether targets for textile waste preparation for reuse and recycling should be introduced and are preparing a delegated act of reporting for reuse to strengthen the data availability.

The Second Circular Economy Action Plan (2020) has included textiles as one of five priority product value chains to be integrated into the sustainable product policy framework under the Action Plan. The Commission is proposing a comprehensive EU Strategy for Textiles in 2021 which will aim to strengthen industrial competitiveness and innovation, and boost the market for sustainable and circular textiles, including the market for textile reuse, addressing fast fashion and driving new business models. Proposed measures include:

- Applying the new sustainable product framework to textiles including developing eco-design measures to ensure that textile products are fit for circularity, ensuring the uptake of secondary raw materials, tackling the presence of hazardous chemicals;
- Empowering business and private consumers to choose sustainable textiles and have easy access to reuse and repair services;
- Providing incentives and support to product-as-service models, circular materials and production processes, and increasing transparency through international co-operation;

- Providing guidance to achieve high levels of separate collection of textile waste; and
- Boosting the sorting, reuse and recycling of textiles including through innovation, encouraging industrial applications and regulatory measures such as EPR.

Measures to Achieve Optimum Results

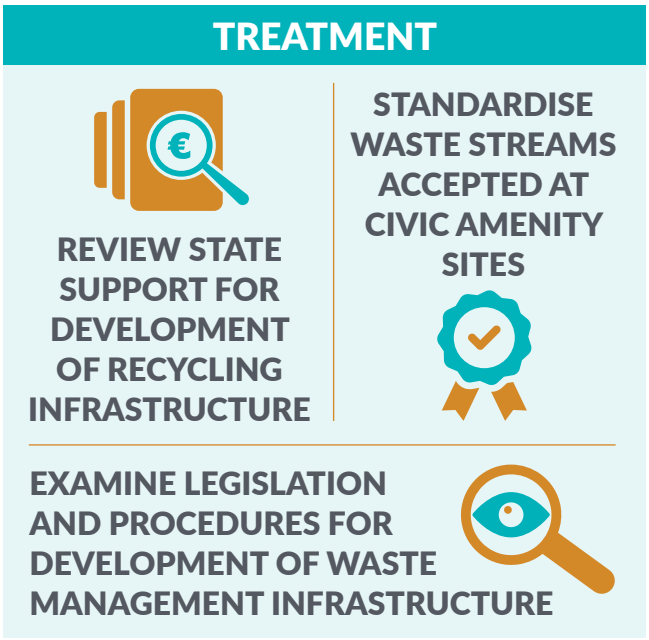
Pending completion of the EC's guidance on separate collection and its proposed Textile Strategy for the EU in 2021 as well as the EPA 'Nature and Extent Study of Post-Consumer Textiles in Ireland', the measures set out below will focus on our current understanding of the textile waste stream within the State as well as principles for future direction of textile management.

We will:

- Develop separate collection framework proposals that take account of the potential global impacts of the international trade in used textiles and in consultation with existing collection operators.
- Review regulation of textile collection banks to ensure compatibility with SDGs.
- Support improved data on the nature and extent of the used textile stream.
- Ban textiles from the general waste bin, landfill and incineration.
- Promote eco-design for clothing and textiles in collaboration with Irish fashion designers and retailers.
- Support an education and awareness campaign around textiles as a theme of SDG 12 Sustainable Production and Consumption.
- In 2021, establish a short-term textile industry action group that identifies opportunities to:
    - capitalise on the value (jobs, economic and resource value) of textiles present in Ireland, including reuse and preparation for reuse and also recycling; and
    - explore options to improve future circularity in textiles including the potential for introducing Extended Producer Responsibility schemes for textiles.
- Over the medium to long-term, examine the potential role of economic instruments (e.g. levies) on 'fast fashion' which could also support higher value indigenous producers by reducing the cost differential.

Supporting Indigenous Treatment Capacity (Waste Management Infrastructure)

Supporting Indigenous Treatment Capacity (Waste Management Infrastructure)



Waste management infrastructure refers to the personnel, companies, waste collection vehicles and waste treatment facilities in place to collect and manage waste. The vast majority of waste in Ireland is collected by the private sector. Similarly, the vast majority of waste facilities are operated by the private sector.

Forward planning for waste management, on the other hand, is carried out by the public sector. Ireland is divided into three regions (Connacht-Ulster, Southern, and Eastern-Midlands) for waste planning purposes. Each region currently has a waste management plan which sets out the policies for the prevention and management of waste in a safe and sustainable manner in that region. LAs are statutorily responsible for the preparation of these plans. A waste management office has been established in each region to formulate and co-ordinate the implementation of the plans. The current plans cover the period 2015-2021, and the preparation of a 'Waste Action Plan for a Circular Economy' will be key to the formation of the replacement plan. The replacement plan in turn will be central to the achievement of national policy goals and targets.

Based on EPA data each person living in Ireland generated an average of 577 kg of municipal waste in 2017. This places pressure on our infrastructure to cope with the amount of waste we are generating, again leaving us exposed to potential environmental damage and/or a potential slow-down in the development of our economy due to a lack of outlets for managing waste. The provision of adequate contingency capacity to enable the State withstand such shocks is a key priority.

Ireland does not produce enough material to support a viable recycling industry for certain waste streams such as, paper, steel or aluminium (all exported for recycling).Ireland recycles glass, wood and only a small amount of plastic. Moreover, despite the proximity principle which suggests that waste should generally be disposed of as near to its place of origin as possible, we do not have the power to direct waste to particular facilities or even to keep it in Ireland for treatment. Ireland is reliant on exports of municipal, C&D, packaging and other wastes in order to manage the waste we produce – estimated at 9.5 million tonnes in 2020. This leaves the State potentially exposed if there are external shocks to the export market beyond our control. It also means that we are exporting materials, energy and jobs that could be harnessed here.

There will always be a risk that outlets throughout the EU (for example, under-capacity Waste to Energy facilities), or facilities in a post-Brexit UK may be in a more competitive position relative to Irish facilities. As a result, we do not have direct control of our waste and any effort made by a member state to apply the proximity principle at a state level would need to be carefully calibrated to ensure compliance with State Aid rules as well as the principle of free movement of goods.

However, we can and should use the policy and regulatory framework to create the right conditions to support indigenous capacity by, for example, measures to ensure that the right material ends up in the right bin and in a suitable condition, thus making it available for separate collection and subsequent recycling, reuse or repair. Incentivised pricing systems backed by strong and consistent enforcement are essential for this.

Sharing responsibility with other stakeholders for

delivery of our revised EU targets will be another important element – including through amended waste collection permit conditions. This will provide a significant incentive to really drive segregation, increasing the value of the contents of recycling bin and brown bins, supporting the viability of indigenous recycling capacity as well as composting and digestate facilities.

The Challenge

The primary objective here is to support the development – for environmental and economic reasons – of the adequate and appropriate treatment capacity at indigenous facilities to ensure that the full circularity and resource potential of materials is captured in Ireland. Adequate in this sense refers to volume while appropriate here relates to where a treatment process sits in the waste hierarchy. While the move away from disposal and increased use of recovery has helped Ireland in realising our EU targets, we need to drive on and move up the waste hierarchy with reducing reliance on recovery over the medium term.

Developments in export markets in recent years have seen the value of paper exported for recycling reduce significantly. On the other hand, paper pulp (or fibre) is a high value material which is easily sold at a far higher price than raw untreated paper. The Department and the waste sector are examining the paper sector in Europe with a view to determine the viability of an indigenous treatment facility and identifying the best option for Ireland.

Measures to Achieve Optimum Results

- We will ensure a new National Waste Management Plan for a Circular Economy is in place by January 2022, replacing the three existing Regional Waste Management Plans.
- Regional Waste Management Planning Offices will be the primary decision makers for all waste management planning operational issues.
- Together with other stakeholders, we will review the role of the State in supporting the development of indigenous recycling infrastructure.
- We will drive higher levels of segregation to support investment in treatment capacity.
- We will examine the legislation and procedures regulating the development of waste infrastructure and whether processes and timelines can be streamlined.
- We will introduce legislation/procedures to strengthen the provision of contingent capacity.
- We will examine measures, including legislation, to strengthen the powers of the regulatory authorities to direct waste and to ensure that collectors have contingent capacity in place.
- We will formalise the role of civic amenity sites and agree a standard list of waste streams to be accepted at sites.
- We will examine how segregated waste and recycling bins using uniform labelling could be provided on street, and at public events and festivals.
- We will work with the waste sector to encourage investment to allow for the collection and separation of soft plastics and black plastics.

By-Products

By-Products

Under certain circumstances substances may be considered a by-product rather than a waste. This has clear economic value for operators by allowing them to treat such material as a resource rather than a waste. It has broader circular economy benefits by ensuring that the productive life of resources is enhanced and extended but requires an efficient, sustainable system to function effectively.

In order to be considered a by-product, a substance or object must satisfy the following conditions:

- further use of the substance or object is certain;
- the substance or object can be used directly without any further processing other than normal industrial practice;
- the substance or object is produced as an integral part of a production process; and
- further use is lawful in that the substance or object fulfils all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

The legislation governing by-product determination in Ireland is the European Communities (Waste Directive) Regulations 2011, (S.I. 126 of 2011). Regulation 27 of this Statutory Instrument transposes Article 5 of the 2008 Waste Framework Directive (Directive 2008/98/EU) and sets out the circumstances in which a material can be considered a by-product and not a waste.

A decision made by an economic operator under Article 27 must be notified to the EPA, who maintain a register and may review and overturn a decision. Further information on the Article 27 process can be found on the **EPA website**.

Following an extensive consultation process with relevant stakeholders, in June 2019 the EPA published detailed Guidance on Soil and Stone By-Products, which are the subject of a significant number of by-product notifications to the EPA. This guidance should assist and encourage operators to use the by-product process to have excess uncontaminated soil and stone used in a lawful and beneficial manner rather than being disposed of as waste. The guidance is available on the **EPA website**.

The Challenge

The current by-product process could be improved to provide more certainty and more timely responses. A number of responses to the Department's consultation (February 2020) expressed concerns about the current system governing the by-products process in Ireland, particularly regarding the time taken for final determinations to be made on notifications and a perceived lack of clarity on the process. We must enhance the efficiency of the process if we are to fully realise the circularity potential of by-product status.

Measures to Achieve Optimum Results

- We will work with regulatory authorities and other stakeholders to streamline the by-product notification process, particularly focusing on identified priority waste streams. The EPA commenced a public consultation process on a new guidance document in April 2020. This will examine issues such as who is entitled to make a notification, prohibiting the use of material prior to EPA determination being finalised and agreeing specific templates to assist industry in making a notification. The setting of specific timelines for further information requests and actions for when such deadlines are exceeded will also be examined.
- As part of this we will introduce an appropriate fee for all Article 27 notifications to the EPA. Such a fee would help fund the review process for notifications and encourage those seeking an Article 27 decision to ensure a high-quality notification which meets all of the criteria.
- We will work with all stakeholders to promote the appropriate use of the Article 27 process to minimise the volume of material entering waste facilities which could be put to productive use elsewhere. In particular we will work with the public sector to ensure that the Article 27 process is utilised where appropriate in all public sector contracts.

- We will work with the EPA and the Local Authority sector to establish if Article 27 notifications for certain materials, for example uncontaminated soil and stone, could be assessed by LAs instead with a view to freeing up EPA resources for other areas and reducing the time needed for determinations to be finalised.

End-of-Waste

End-of-Waste

End-of-waste refers to a process where material which is recovered or recycled from waste ceases to be waste. This process is based in legislation, namely Article 6 of the Waste Framework Directive (Directive 2008/98/EC), which was transposed by Regulation 28 of the European Communities (Waste Directive) Regulations, 2011.

The legislation sets out conditions which must be considered before end-of-waste status can be given. These conditions are set out below:

- The substance or object is to be used for specific purposes.
- A market or demand exists for such a substance or object.
- The substance or object fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products.
- The use of the substance or object will not lead to overall adverse environmental or human health impacts.

End-of-waste decisions can be made at three levels, as follows:

1. EU level decisions, which apply across the European Union. So far only 3 end-of-waste criteria have been established at EU level. These are for the following products:
    - Iron, steel and aluminium scrap
    - Glass cullet (recycled glass that has been crushed and is ready for re-melting)
    - Copper scrap
2. National criteria, which apply across the country. No national decisions on end-of-waste have been made in Ireland to date.
3. Single-case decisions, which apply only to the operator who made the application for end-of-waste status to the EPA for a decision.

The EPA are responsible for making decisions on end-of-waste applications in Ireland. Further information on the process and details of end-of-waste decisions granted to date can be found on the **EPA website**.

An end-of-waste decision has significant value because it allows for the creation of new products from the material and also takes it out of the waste regulatory system. It therefore has a significant role to play as we move to a more circular economy by moving material up the waste hierarchy and extracting value from what would have been discarded previously. This helps us meet recycling targets, facilitates use as a product and reduces pressure on waste infrastructure. Reduced carbon emissions arising from the replacement of virgin materials is an important co-benefit.

A number of responses to the Department's recent consultation expressed concerns about the current system governing the end-of-waste process in Ireland, particularly regarding the time taken for final decisions to be made on applications and a lack of clarity on the process. We must enhance the efficiency of the process if we are to fully realise the circularity potential of end-of-waste status. As stated previously the EPA recently published draft guidance to assist applicants in preparing an end-of-waste application and opened a consultation process to offer stakeholders an opportunity to comment on its contents. The draft guidance can be found at following links:
End-of-waste guidance - Part 1
End-of-waste guidance - Part 2

The Challenge

There are no specific end-of-waste thresholds or deadlines set out in legislation. However, in recognition of the important role that end-of-waste can play in helping deliver on other targets, such as recycling, we are committed to improving the operation of this area. To this end, we are setting the following targets:

- Streamline the end-of-waste application and decision-making process. This will encourage greater use of the process by industry and assist in meeting Ireland's recycling targets, thereby reducing pressure on waste disposal and recovery infrastructure.
- Obtain end-of-waste status for a number of priority waste streams, particularly in the C&D sector.

Measures to Achieve Optimum Results

- We will introduce an appropriate fee for end-of-waste applications. Such a fee would help fund the decision-making process for end-of-waste applications and encourage those seeking an end-of-waste decision to ensure a high quality application which meets all of the criteria.
- We will work with regulatory authorities and other stakeholders to streamline the application and decision-making process for end-of-waste, including establishing if there is a need to develop legislation or other binding frameworks.
- We will examine whether certain end-of-waste applications should be determined by LAs, while also ensuring consistency is maintained in the end-of-waste decision-making process. This would involve applications from operations which are already regulated at Local Authority level and would help free up EPA resources to focus on national priority areas.
- We will seek to establish a working group to develop national end-of-waste applications for identified priority waste streams, building on the experience gained from the various operator specific applications which have achieved end-of-waste status to date. This working group would consist of relevant stakeholders and regulatory bodies, including product standard and certification bodies. We would ensure the establishment of such a working group does not adversely impact the decision-making process on ongoing or future operator specific end-of-waste applications.

Extended Producer Responsibility

Extended Producer Responsibility

In a circular economy, producers must be held to account for the sustainability of the products they place on the market.

Extended Producer Responsibility (EPR) is an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle. Under an EPR model, producers take over the responsibility (financial and/or organisation) for collecting or taking back used goods and for sorting and treating for their eventual recycling.

Ireland uses the EPR model for dealing with a number of waste streams and Producer Responsibility Initiatives have been developed based on the 'producer pays' principle. The waste streams covered under existing EPR schemes in Ireland are:

- Waste Electrical and Electronic Equipment (WEEE)
- Batteries
- Packaging
- End-of-life vehicles (ELVs)
- Tyres
- Farm plastics.

To date, these schemes have operated very successfully and have enabled Ireland to reach our domestic and EU recycling targets. They have also successfully contributed to Ireland meeting its overall environmental goals and have diverted substantial amounts of waste from landfill. A summary of Ireland's current performance and progress towards EU targets is available on the EPA website.

The Challenge

The European Commission, having revised the rules for EPR schemes under the Waste Framework Directive, intends to put forward waste reduction targets for specific streams as part of a broader set of measures on waste prevention in the context of a review of the Packaging Directive. Under EU targets introduced by the Circular Economy Legislative Package and the Single Use Plastics (SUP) Directive, Ireland must strive to significantly reduce total waste generation and achieve the following targets:

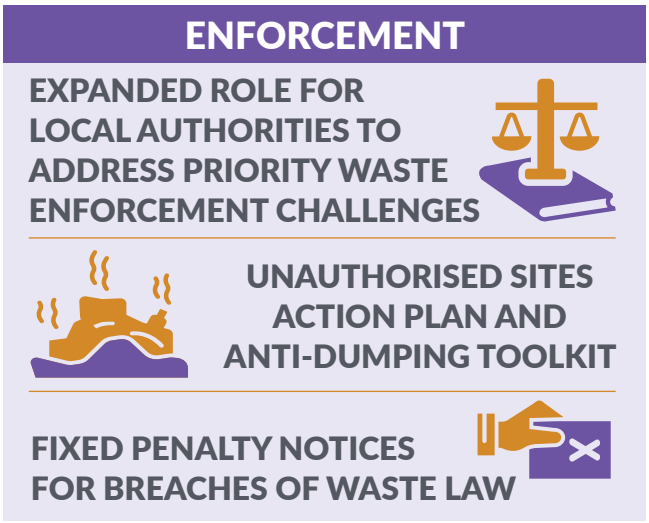
- Material specific targets for different packaging materials and an all packaging recycling rate of 65% by 2025 and 70% by 2030.
- Address the fastest growing waste stream globally (WEEE) through the achievement of the ambitious WEEE collection targets of 65% from 2019 onwards.
- Provide an incentive to producers to design products that contribute to waste prevention and facilitate recycling by taking into account their durability, reparability, reusability, recyclability and the presence of hazardous substances.
- Adherence to the Waste Framework Directive stipulations regarding the financial contributions to be paid by producers.
- Under the SUP Directive new EPR schemes will have to be introduced for tobacco products containing plastic filters, balloons, wet wipes and fishing gear (see Chapter 9).

Measures to Achieve Optimum Results

- We will introduce new EPRs for the waste streams listed in the SUP Directive.
- We will extend the tyres EPR to include all categories of tyres provided for in the Eighth Schedule of the Tyre Regulations.
- We will remove individual producer self-compliance as an option across all EPRs.
- We will build on the success of our existing EPR schemes to capitalise on circularity potential.
- We will strengthen the Ministerial scheme approval process to ensure that costs related to the collection and treatment of end-of-life products are sufficiently covered by the fees paid by the producers to the scheme.
- The approval process will also be revised to ensure the provision by each EPR scheme of strategic plans for each waste stream which will foster greater engagement along the supply chain with a particular focus on the design and manufacturing sectors.
- We will review end-of-waste and by-products regulation to remove barriers to circular economy developments associated with our existing EPR waste streams.
- We will adopt the new EU requirements for EPR schemes, provide incentives and encourage sharing of information and good practices in waste recycling and drive better product design.
- We will improve the governance and transparency of EPR schemes to provide:
  - clear definition of producer roles and responsibilities;
  - measurable waste management targets;
  - data collection and reporting systems; and
  - equal treatment and non-discriminatory services for all participants.
- We will ensure EPR schemes modulate, where possible, the financial contributions paid by producers by 2023.
- Through conditions of the Ministerial approvals under which they operate, we will mandate that all EPR schemes contribute towards a sustainable national funding model for awareness and enforcement.
- We will optimise our data collection and analysis to support and inform policy decisions and interventions.
- We will examine the role of a national register for all EPR streams.
- We will require EPR schemes to formalise the recording of existing reuse practices and expand the development of reuse activity in Ireland to achieve the objectives of the circular economy.
- Ahead of the introduction of EU targets, we will adopt national reuse targets.
- Through conditions of the Ministerial approvals under which they operate, we will shift the existing recycling focus of EPR schemes upwards towards prevention and reuse to better reflect the objectives of the waste hierarchy.
- We will act on appropriate recommendations in the Civic Amenity Site Report to inform their role in EPR waste streams.
- We will utilise national and EU funding streams to support research and innovation regarding each of the EPR waste streams to advance the objectives of the circular economy.
- We will examine the feasibility of introducing further EPR arrangements for other waste streams including, for example:
  - textiles
  - bulky waste including mattresses
  - paint
  - medicines
  - farm hazardous waste.

Waste Enforcement

Waste Enforcement



Effective enforcement of waste legislation is vital for the credibility of our systems of waste management. Ireland has experienced significant improvements in waste enforcement in recent years and a corresponding change in the culture of compliance. A new regional enforcement structure has brought greater consistency and coordination which has resulted in the cessation of significant illegal waste activities with corresponding environmental benefits on identified sites across the regions. However, new and complex challenges await and we must respond with innovative solutions and greater flexibility in the way we deliver them.

Effective waste enforcement is essential in order to:

- protect human health and the environment;
- address specific problems – e.g. illegal dumping;
- give effect to policy objectives;
- ensure a level playing field within the regulated waste sector;
- maintain the integrity of the regulatory system; and
- provide a deterrent effect.

The primary objective of LAs in terms of waste enforcement is to achieve regulatory compliance in relation to waste activities in the LA's functional area. This covers a wide range of roles, including regulatory enforcement; undertaking inspections and taking appropriate measures to bring relevant parties into compliance; addressing unauthorised waste activities; and responding to environmental complaints.

It is a matter for each individual LA in the first instance to deal with any instances of illegal disposal of waste in their area and to take the appropriate enforcement action. LAs have significant powers available to them under the Waste Management Act, to enable them to tackle illegal waste activity. This includes the power to investigate complaints; prosecute offences; apply to the Courts for the imposition of fines; enter onto and inspect premises where there are reasonable grounds for believing that there is a risk of environmental pollution; direct a holder of waste to dispose of it in a certain way within a specific timeframe; and monitor and inspect waste holding, recovery and disposal facilities.

LAs are assisted by three Waste Enforcement Regional Lead Authorities (WERLAs), established in 2015 and covering the Southern, Eastern and Midlands, and Connacht/Ulster Regions. The WERLA offices have responsibility for coordinating waste enforcement actions within regions, setting priorities and common objectives for waste enforcement, and ensuring consistent enforcement of waste legislation while still leaving Local Authority personnel as first responders on the ground. The work of the WERLAs is overseen by a National Steering Committee which includes representatives from a wide range of regulatory and law enforcement authorities.

The EPA carries out its waste enforcement functions through the Office of Environmental Enforcement (OEE). The OEE has a mandate to deliver enhanced environmental compliance through enforcement of EPA licences issued to waste, industrial and other activities. It also exercises a supervisory role in respect of the environmental protection activities of LAs. In this regard, the OEE acts as a resource to members of the public who have exhausted all other avenues of complaint. Further enforcement responsibility is assigned to the OEE, including producer responsibility enforcement related to WEEE, batteries and tyres.

The National Transfrontier Waste Shipment (TFS) Office was established in 2007 as part of Ireland's

transposition of Regulation (EC) No. 1013/2006 of the European Parliament and of the Council (the waste shipment regulation). All transfrontier shipments of waste originating in any Local Authority area in the State that are subject to prior written notification procedures must be notified to and through the National TFS Office who have a dedicated enforcement team in place to tackle the illegal shipment of waste abroad.

The National Waste Collection Permit Office processes waste collection permit applications and review applications for all LAs. It maintains the Waste Collection Permit register, revokes Waste Collection Permits as appropriate, and provides data reports to relevant stakeholders- including enforcement authorities where required.

There is a significant criminal element involved in illegal waste activities – from unauthorised waste collection and the provision of skips to illegal landfilling and the burning of waste. Motivated by money alone, the consequences to the environment can be catastrophic while undermining investment, growth, and jobs within the waste industry.

There are obvious dangers associated with Local Authority and EPA personnel tackling serious criminals. The National Waste Enforcement Steering Committee, co-chaired by the Department and the EPA, has created a network of statutory bodies with a link to waste crime which has facilitated more multi-agency operations taking place on a regional basis. This has produced tangible results for the various enforcement bodies in terms of identifying, stopping and prosecuting non-compliant activities in the waste sector.

It can be difficult to evaluate the performance of individual LAs in discharging their waste enforcement responsibilities and assessments can be contentious. Waste enforcement continues to evolve in the sector, characterised by an increase in the use of technology, the sharing of best practice and intelligence led interventions. With the assistance of the WERLAs, LAs have become more strategic in their approach, analysing patterns of non-compliance and the movement of waste and developing appropriate interventions including disruption techniques. These enhanced enforcement strategies have resulted in the cessation of very significant illegal waste activities with corresponding environmental benefits on identified sites across the regions and will continue to be supported and developed in each LA.

Ireland's significantly improved waste enforcement effort has been acknowledged at EU level, not only through the successful conclusion of **ECJ Case C494/01** but more recently in a European Council evaluation report, "The practical implementation and operation of European policies on preventing and combatting environmental crime in Ireland" (2019). The report notes that "The commitment of the Irish Government to supporting the enforcement of environmental regulation in Ireland has been demonstrated through continued investment in the network of Local Authority waste enforcement officers, increased resources for the EPA and the further development of the WERLA". The report further states that "the evaluation team found in the Irish system many examples of best practices to be shared with other Member States" and highlighted in particular the multi-agency approach that has been developed to tackle waste crime.

The Challenge

While the large-scale illegal dumping of the type that occurred during the late 1990s and early 2000s is no longer taking place, unauthorised practices such as ad-hoc fly-tipping, backyard burning and "man in the van" type waste collection services have continued to rob communities of services and improvements to infrastructure as LAs are forced to divert more resources away from investment in amenities to clean-

up operations. These operators also can gain unfair competitive advantage relative to compliant operators. This is neither fair nor sustainable and enhanced enforcement techniques will be deployed in order to redress the balance and apply the 'polluter pays' principle.

The quality of Ireland's environment is essential to the health and well-being of every citizen while industries such as tourism, agriculture and the food and drink sector depend on clean air, land and water for the quality of their products and services. It makes sense that we protect these resources through effective, proportionate and consistent systems of compliance and regulatory enforcement. Effective enforcement of waste legislation is vital for the credibility of our systems of waste management.

The waste industry continues to make a significant investment in driving standards in terms of service provision. That investment deserves to be protected against those illegitimate operators who seek to gain commercial advantage by circumventing the rules that have been put in place to safeguard our environment and promote the behavioural change that will help transition us to a more circular economy.

Measures to Achieve Optimum Results

- The role, capacity and responsibilities of the WERLAs will be enhanced to position the Local Authority sector better to respond to emerging and priority enforcement challenges. Under this enhanced model WERLAs will have responsibility for the following:
  - Monitoring and Enforcement of the Household Waste Kerbside Collectors in each region to include collection, recovery and disposal of the different household waste streams collected at kerbside.
  - Special Projects – including sites or operators

of concern as they arise including issues of waste criminality.
    - Enforcement of Producer Responsibility Initiatives.
    - Introduction of an ICT strategy to include development and use of latest technology including mobile workforce systems and GIS to support above functions.
    - Developing a national approach to the delivery of legal services.
- In recognition of the vital role that waste enforcement has to play in the transition to a circular economy, we will continue to subsidise the costs associated with Local Authority waste enforcement. A new equitable and sustainable funding model for the allocation of the Local Authority Enforcement Measures Grant Scheme has been introduced. This will ensure that resources are placed where they are most needed.
- The EPA will publish a report on crime in the waste sector in Ireland including an overview of the scale, cost and impact of waste crime in Ireland, the factors leading to waste crime, the types of waste crime taking place, recommendations for tacking waste crime and the potential return on investment made in the waste enforcement sector.
- Regional multi-agency forums have been established in all Garda Regions on foot of a request from the Department for a network of contacts with An Garda Síochána to mirror the regional profile of the Waste Enforcement Regional Lead Authorities. These fora will now be used to ensure a comprehensive and multi-agency approach to waste crime is developed.
- We will develop a sustainable financing model to broaden the cost base for enforcement in order to maintain an effective regulatory and enforcement system - this will include an industry contribution.
- All waste enforcement legislation will be "data proofed" to ensure that all available and emerging technologies can be fully utilised in a manner which is GDPR compliant.
- In conjunction with the Agency and the local government sector, we will review the EPA's role in respect of the environmental protection activities of LAs with a view to providing a more flexible, targeted oversight function to complement existing powers under Section 63 of the Environmental Protection Agency Act.
- We will introduce further Fixed Penalty Notices penalties for appropriate offences.
- We will require financial provision for permitted waste facilities that present a significant risk to insure the taxpayer from unsatisfactory waste operators leaving significant closure liability.
- An illegal/unauthorised sites action plan will be developed to assist authorities to detect early signs of an illegal site or a site operating outside the conditions of their permit so that risks to the environment and communities can be managed properly. Such a plan will include "play books" on appropriate legal interventions that should be taken including imposition of the landfill levy where appropriate.
- We will review the National Anti-Dumping Initiative so that communities and voluntary groups can continue to be supported in their efforts to tackle this problem in a sustainable manner.
- We will develop an online anti-dumping toolkit hosted by mywaste.ie to assist LAs in tackling illegal dumping.

Green Public Procurement

Green Public Procurement

Green Public Procurement (GPP) is defined as a process whereby people meet their needs for goods, services, works and utilities by choosing solutions that have a reduced impact on the environment throughout their life-cycle, as compared to alternative products or solutions. GPP is acknowledged as a vital policy lever in driving the prevention of waste and related environmental policy objectives and the public sector must be a leader in this regard. It is an important element of Sustainable Public Procurement policy.

Incorporating green criteria into public purchasing provides an opportunity to convert environmental policy objectives on carbon reduction, air and water quality, and waste reduction into delivered actions. The procurement of goods and services by government departments, LAs and public bodies, in line with the Government's own policies, will underpin the credibility of national policy objectives and enhance Ireland's standing as a green economy. The 2019 Climate Action Plan has identified the following steps to be taken to accelerate green procurement practice:

- The phased introduction of green criteria across government and public sectors targeting priority products and services.
- Building green criteria into the Office of Government Procurement (OGP) frameworks as they arise for renewal.
- Providing support to procurers in using GPP guidance.
- Engaging with suppliers, especially SMEs regarding GPP opportunities.
- Working collaboratively to ensure an all of government approach to the successful incorporation of green criteria and other social considerations into public procurement policy and practice.
- Developing clusters and networks for GPP.
- Using existing GPP frameworks in place in other Member States
- Building monitoring and reporting into the public sector corporate governance model.
- Supporting further research on quantifying costs/ benefits of GPP in an Irish context.
- The OGP reporting annually on implementation of GPP.

Action 148 of the 2019 Climate Action Plan commits Ireland to 'Mandate the inclusion of green criteria in all procurements using public funds, introducing requirements on a phased basis and provide support to procurers as required.' The steps necessary for delivery are identified as:

1. The OGP to issue a Circular to all government departments and public bodies.
2. Develop an upskill programme for procurers and specifiers.
3. Prioritise target areas.
4. Government departments to measure and report on GPP on an annual basis.

In October 2019, the OGP published DPER Circular 20/2019 requiring due consideration of green criteria in purchasing decisions. Specifically, the circular:

- instructs departments to consider including green criteria in public procurement processes;
- informs departments that DCCAE and the OGP will support the implementation process to ensure that GPP becomes part of the mainstream public procurement process;
- requires departments to incorporate relevant green procurement measures into their planning and reporting cycles; and
- highlights the possibilities for departments to deliver wider social and environmental aims through public procurement. In this regard, public bodies are encouraged to engage with the OGP to use frameworks which include relevant social and environmental considerations.

At EU level, product and service legislation already mandates a high standard of environmental protection such as energy efficiency, and as a result much public procurement can be said to already incorporate green criteria although it is not possible currently to quantify this.

The Second Circular Economy Action Plan 2020 (CEAP) adopted by the European Commission in March 2020 recognises the reduced impact of GPP due to the limitations of voluntary approaches. Acknowledging that public authorities' purchasing power can serve

as a powerful driver of the demand for sustainable products, the second CEAP proposes:

- minimum mandatory GPP criteria and targets in sectoral legislation;
- phasing in compulsory reporting to monitor the uptake of GPP without creating unjustified administrative burden for public buyers;
- supporting capacity building with guidance, training and dissemination of good practices; and
- integrating life cycle assessment in public procurement as part of the Commission's proposed 'Strategy for a Sustainable Built Environment'.

More recently, the European Commission's 'Farm to Fork Strategy' has proposed the mandatory inclusion of green criteria in the public procurement of food and catering services.

The UN SDGs similarly recognise the transformative potential of green public procurement. SDG12 commits to 'ensure sustainable production and consumption processes' and SDG Target 12.7 will 'promote public procurement practices that are sustainable in accordance with national policies and priorities.' The OGP is the designated lead for this target within the **SDG National Implementation Plan 2018 - 2020**.

The Programme for Government also references a number of important commitments in relation to GPP.

The Challenge

In 2012, Ireland's National Action Plan on GPP, **Green Tenders**, adopted the indicative and voluntary EU political target of 50% of GPP, where GPP means incorporating green criteria into the procurement contract. This target applies in respect of both the number and the value of public procurement contracts concluded. In the absence of a monitoring and reporting system for GPP, it is not possible to say how Ireland has performed in meeting the 50% target.

In 2014, the EPA published a comprehensive **guidance document** for public procurers. The guide set out extensive criteria adapted specifically for the Irish procurement environment.

The EU approach to GPP aims to facilitate the voluntary inclusion of green requirements in public tender documents by providing verifiable environmental criteria for specific products and services, based on a life-cycle approach.

In April 2016, new EU public procurement directives took effect which have created a more supportive environment for GPP and make provision for the application of additional award criteria beyond the lowest price. For now however, there are still no general EU targets for GPP and the promotion and development of GPP has taken place on a voluntary basis, with one notable exception: the Clean Vehicles Directive requires life cycle costing to be included in the selection criteria for purchasing public transport service vehicles and when revised in 2019 (to take effect August 2021), the Directive further provided for a minimum percentage of publicly purchased vehicles which must meet the defined 'clean vehicle' standard.

Measures to Achieve Optimum Results

- As part of the delivery on GPP commitments under the Programme for Government we will support the EPA in the development of GPP-specific measures as part of the National Waste Prevention Plan:
  - Training for procurers and specifiers in public bodies from 2020.
  - Update 'Green Procurement Guidance for the Public Sector' (2014).
  - Advance monitoring and reporting of GPP in government departments as provided for in DPER Circular 20/2019.
  - Extend monitoring and reporting of GPP to all public bodies.
- We will review the National Action Plan 'Green Tenders' and consider:
  - mandatory inclusion of green criteria in all public purchasing; and

  - how to promote circular economy principles in public procurement.
- We will continue to work with the OGP to develop public procurement frameworks as GPP exemplars and to support public bodies showing leadership in sustainable behaviour.
- We will support government departments, LAs and public bodies in how to use GPP to reach environmental policy objectives such as clean air, water, etc.
- We will develop a GPP monitoring and reporting system that can deliver robust and insightful data analysis to inform future actions and policy making.
- We will work across the UN SDGs, all government, climate action and other environmental policy areas to promote training across the public service in environmental sustainability to improve corporate and policy support for GPP beyond specifiers and procurers.
- We will support a GPP network for procurers and sustainability advocates in the public sector as part of the Green Government initiative.
- We will support private sector initiatives that respond to public sector GPP policy.
- We will press for further ambition and support for mandatory GPP in EU deliberations of the Second CEAP and related EU initiatives.
- We will ensure GPP actions feature prominently in the development of future public plans in particular the National Waste Prevention Plan and the new National Waste Management Plan for a Circular Economy.
- We will support research and innovation through EU and government funding programmes that promotes and develops GPP in Ireland.
- We will collaborate with EU Member States to explore opportunities for sharing expertise and for joint procurement initiatives.
- We will contribute to the deepening and broadening of Sustainable Procurement in particular through the work of the OGP's Social Considerations Advisory Group.

Permit Exemptions

Permit Exemptions

Authorisation is required for the operation of waste disposal and recovery activities in Ireland. Under European legislation [Article 24 of the 2008 Waste Framework Directive (2008/98/EU)], the requirement to obtain a permit may be waived for a facility in the following situations:

- Disposal of their own non-hazardous waste, in accordance with Best Available Techniques specified, at the place it was produced; or
- Recovery of waste.

Article 25 of the above Directive states that if a Member State grants such an exemption it must set out the types and quantities of waste that are covered by the exemption and the treatment method to be used. Any such exemptions granted must still ensure waste is treated without endangering human health or harming the environment.

Where hazardous waste for recovery is exempted, the Directive specifies that additional requirements regarding type of activity, limit values of hazardous substances in the waste, and emission value limits should be set out by the Member State concerned.

Ireland has transposed these provisions through exempting the requirement to hold a waste licence if the conditions set out for a Certificate of Registration or Waste Facility Permit, both of which are usually issued by an LA, are met.

A number of other Member States have utilised Article 24 exemptions to manage the treatment of certain waste streams, particularly in relation to construction and demolition. It has been proposed, in the course of our consultation process, that Ireland should consider the adoption of a similar approach. We will now seek to establish if there is scope for greater use of Article 24 exemptions in Ireland for specific waste streams.

Measures to Achieve Optimum Results

- We will prioritise the introduction of regulations to allow for Article 24 exemptions for the on-site treatment of invasive alien plant species. This material is currently transported to appropriate off-site facilities for treatment and the introduction of such exemptions will help to mitigate the environmental risks associated with such transportation.
- In conjunction with the EPA and the Local Authority sector we will seek to form a working group to examine what other waste activities might be more appropriately considered under the exemption approach. This includes, but is not limited to, certain land reclamation activities, the on-site management of canteen food waste and sites to encourage greater repair, reuse or recycling of appropriate waste streams such as construction and demolition material, electrical equipment, etc.
- This working group will also seek to develop any legislative changes necessary for such exemptions, decide on appropriate level of oversight necessary to prevent any potential risks to human health or the environment, prepare detailed guidance on the use of such exemptions in Ireland, and recommend an appropriate body to oversee the exemption process and maintain a register of all such exemptions granted.
- We will conduct a review of Article 24 exemptions undertaken in other EU Member States with a view to using this knowledge to encourage greater use of exemptions in Ireland as a means of managing certain waste streams.

Waste Data and Data Flows

Waste Data and Data Flows

Collectors of waste, exporters of waste and facilities which accept waste for treatment are required to report data on their activity on at least an annual basis. This data is used to collate statistics which must be validated in accordance with EU reporting procedures. The systems for gathering data for EU reporting are well established and continuously improving. Data is gathered on an annual basis and validated by LAs, regional offices and the EPA. The National Waste Statistics web resource, designed to provide more timely indicators of waste generation and management, currently includes quarterly figures on municipal waste accepted at Irish landfills and thermal treatment facilities, as well as preliminary annual information on waste accepted at Irish landfills. The EPA continues to develop this area to include more early waste indicators as data becomes available. The EPA and the National Waste Collection Permit Office are working closely to harmonise reporting requirements and reduce the reporting burden for Local Authority permit holders. This data integration work will deliver added benefits to licensees and permit holders as well as improving the quality and timeliness of waste statistics.

The EPA is responsible for compiling a variety of official waste statistics, and compiles validated data in line with reporting timelines under EU legislation. However, such data is largely historical and is often reported with a time lag of 18 months or later, depending on the reporting requirements.

The responsibilities of the National Waste Collection Permit Office (NWCPO) include the annual reporting of waste statistics from waste collections in all regions. The NWCPO also maintains the national register for Waste Facility Permits (WFP) and Certificates of Registration (CoR) issued by all LAs. The office also hosts the National Annual Returns database for all Waste Collection Permits (WCP), WFPs and CoRs within the State.

NWCPO Data is shared with the EPA where permissible, in order to minimise duplicate reporting and create a platform for tracking waste flows. Efficiencies in waste data can be improved by national authorities continuing to work closely together and improving alignment/integration between the organisations' IT systems and databases and the associated validation work carried out by different organisations.

The Challenge

Systems will be put in place to collect data which is accurate, timely, relevant, and useful for policy makers and regulators. The current use of multiple systems across different regulatory bodies is time consuming and inefficient. The EPA, supported by the NWCPO, will lead a national network of waste data authorities to strengthen the national governance arrangements around waste data collection, validation, sharing and integration and to develop a centralised online system to be used as the primary waste repository source of compilation and validation of waste collectors and facility operators.

More detailed, accurate and timely data will be used to inform the policy options and measures required to transition to a more circular economy and to monitor progress in delivery over time. This will enable more holistic, integrated assessments of the full range of environmental impacts of different waste management options, including the impact of emissions and climate change effects. It will provide for improved monitoring of the effectiveness of waste prevention efforts and identify where waste prevention initiatives will be targeted.

At a more local level, good quality data relating to individual waste collectors and facilities will allow for compliance assessment of those operators, and provide for intelligence gathering opportunities for waste regulators in the fight against waste crime and will be used to:

- Identify anomalies;
- Make predictions for capacity requirements;
- Identify sites which are operating in exceedance of their permitted capacity; and
- Facilitate the monitoring and investigation of potential illegal activity at an early stage to allow for better enforcement.

Measures to Achieve Optimum Results

- We will ensure that data which tracks waste flows is as comprehensive as possible and can be shared by all relevant agencies in a timely manner. Cross-agency cooperation and smarter use of integrated IT systems will be prioritised, which is also essential in tackling illegal activity.
- A number of EU Member States have implemented live reporting systems and others are exploring this option. We will establish a working group to examine these systems and the feasibility of implementing similar systems in Ireland. Such systems could be used to track all waste from site of creation to final destination.
- We will explore systems which can carry out automatic validation in order to provide for the extraction of data in the required format to facilitate early warning systems of significant issues.
- We will develop reporting systems to capture the new reporting requirements of the Circular Economy Package.
- We will require large-scale construction projects to provide LAs with data on waste management and movements to increase the visibility and traceability of their waste. These systems are currently available and operating at household level and have improved the standard of record keeping, reporting and general operations management, across that sector.
- We will review and improve data quality requirements on waste operators.
- We will introduce penalties including Fixed Payment Notices for inaccurate data reporting.
- We will maximise the opportunities for the sharing of waste data and intelligence between waste regulatory bodies and others who hold waste data.

Research and Innovation

Research and Innovation

Research creates a path for generating new ways of doing things, and has an important role in informing policy making and the technological advances that will be required to support the achievement of a circular economy.

From a societal perspective, there is potential for job creation, a social dividend and environmental value from the transition to a circular economy. Advancing our knowledge in the areas of production, consumption and disposal patterns, of materials and chemicals and their influence on the circularity of products, of societal and human behaviour and how change might best be achieved, and of the interactions between the bio-economy and the circular economy will be vital to achieving our desired outcomes.

From an enterprise perspective, a paper drafted by the Department of Business, Enterprise and Innovation in 2019, titled '**Realising the opportunities for enterprise in the bioeconomy and circular economy**' outlined that it was apparent from the analysis highlighted that many of the enterprise opportunities regarding the bioeconomy and circular economy remained unrealised and that enterprise policy needs to be aware of developments and respond to emerging opportunities as they arise.

Research and innovation will be a vital component in enabling enterprise to identify, understand and realise the opportunities presented by the circular economy. It will also enable them to transform their organisations, supply chains and value chains to ensure they can respond to the changes in the policy, regulatory and societal environment in which they conduct their business.

National Policy Framework on Research and Innovation

Innovation 2020 - Ireland's whole of government strategy on research and development, science and technology sets out Ireland's ambition to be a global innovation leader - was launched in December 2015 and is due to conclude at the end of 2020. The mid-term review of Innovation 2020 published in 2019 reaffirmed the relevance of its policy objectives, the need to increase investment in research infrastructure and research talent, and the need to increase coordination and collaboration across the system.

This includes the role of innovation in addressing the great challenges of our time, including climate change, resource depletion, environmental degradation, and pollution. The challenges informing Innovation 2020 are therefore the same as those driving the development of both the bio-economy and the circular economy in Ireland.

Work is underway to develop the successor strategy to Innovation 2020 which will once again be a whole of government strategy. A 7-year strategy is proposed, spanning from 2021 to2027, and it is expected to be published in the first half of 2021. This will be aligned with both the next EU Multiannual Financial Framework (including Horizon Europe) and the National Development Plan 2018-2027. The high-level document will set out Ireland's research and innovation vision, high level goals and objectives and will be accompanied by two or three time-bound action plans or work programmes over the 7 years to deliver on the goals, objectives and targets set. Clear linkages will need to be made between the whole of government strategy for research and innovation and the priority given to investing in research and innovation across multiple policy areas, including policy on waste and the circular economy.

Research Prioritisation

In 2012, the Irish Government introduced Research Prioritisation, which aligns the majority of competitively awarded public investment in research with 14 priority areas. Innovation 2020 committed to reviewing these priority areas of focus to ensure that they are still valid and to revise them, if necessary, in light of changed circumstances.

The Refresh of Research Priority Areas 2018-2023 identifies six themes with which the majority of competitively awarded public investment in research will be aligned. A number of these are of direct relevance to the bio-economy and circular economy, including the priority themes 'Food', 'Manufacturing and Materials', and 'Energy, Climate Action and Sustainability'.

The transition to a circular economy involves separating growth from the use of scarce resources. To reflect this shift, the Energy, Climate Action and Sustainability theme was introduced as part of the refresh and the two priority areas have been updated to:

- Decarbonising the Energy System
- Sustainable Living.

This prioritisation has led to a broadening of research and innovation initiatives to support developments regarding resource efficiency and the circular economy. A range of these initiatives is outlined in Appendix 4.

EU Funding

In addition to domestic funding programmes there are a number of EU funding streams that will support research and innovation regarding the circular economy.

These include:

- The LIFE programme which is focused on transitioning research to implementation – and for which the new programme post 2021 has a specific sub-programme on the circular economy.
- The Horizon 2020 programme and its successor Horizon Europe which are focused on collaborative pan European research projects.
- The EU Innovation Fund which focuses predominantly on the reduction of Emissions Trading Scheme installations and the reduction of their greenhouse gas emissions.

These funding programmes have the ability to make a valuable contribution to our endeavours in research and innovation and we need to continue to focus on supporting Irish entities in engaging with and successfully participating in these programmes.

The Challenge

Increasing collaboration and co-operation on research

The change in research prioritisation has resulted in a much broader range of research funders and researchers undertaking research related to waste and the circular economy. The EPA has a statutory role in coordinating environmental research. The Research Programme is funded by the Department of Communications, Climate Action and Environment (DCCAE), and has a strong focus on policy, driven by both national regulations and European Directives. The EPA's current Research Programme provides funding under three pillars, Climate, Water and Sustainability, and calls are announced periodically over the duration

The EPA also organises Research Co-ordination Groups for each of the pillars with the Sustainability pillar incorporating circular economy related research. These groups bring together the various funding bodies involved in Sustainability research to co-ordinate and align research activity where possible.

Increased industry engagement, adoption and diffusion of technologies and novel solutions

There are a range of actors involved across the waste industry (see figure 3 on page 74). Creating the opportunities for collaboration between actors within the research and innovation sphere and the entities involved in the various public and private entities involved in the waste industry will be crucial to the trial, adoption and diffusion of the innovative and novel solutions to the challenges we face.

Research prioritisation focused on the waste and circular economy challenges

There are a range of areas where research can provide a crucial role in solving the challenges we face in addressing waste management and the achievement of a circular economy.

This applies across a range of sectors as outlined below.

- Food, Forestry and Marine
- Biomaterials and Biochemicals
- Bioenergy and biofuels
- Mechanical circular economy
- Eco-design
- Mechanical Recycling and Reuse
- Solid Waste Management
- Food Waste
- Construction
- Water Management
- Industrial Symbiosis

Figure 3: Main actors in the circular economy in Ireland

Supply side - creating circular economy outputs	Demand side - creating demand	Governance - combination of push and pull
Enterprise support	**Policy & regulation**	**Leaders**
SMILE	CRNI	BIA Foodcloud
Enrerprise Ireland	DCCAE	Dublin Bike Scheme
EPA	EPA	Enrich Soil Solutions
IBEC	Local Authorities	Go Car
IDA	NGOs	IAMECO
Local Authorities	WEEE Ireland	Rediscovery Centre
Regional Waste Management Offices	**Finance & funding**	Rothar
Users & purchasers	DCCAE	Share Ireland
BIA Foodcloud	Enterprise Ireland	SMILE
BITC Members	Environment Fund	Sunflower recycling
Camara	EPA	**Skills & education**
Online resellers	Local Authorities	An Taisce
Free Trade Ireland	**Evidence & data**	Clean Technology Centre
Individuals, Bargain Hunters	Enterprise Ireland	ECO Unesco
Origin Green Members	EPA	EPA / Green Schools
Social Enterprises	ESRI	Rediscovery Centre
Waste Industry	IBEC	Rehab
Advocay & awareness	Local Authority Prevention	Recreate
Business in the Community	Network	Social Enterprises
CRNI	National Waste Collection Permit Office	**Research & knowledge exchange**
DCCAE		Clean Technology Centre
EPA / NWPP / CRNI	Repak	Enterprise Ireland
Multinationals	Reuse Organisations	EPA
NGOs	Universities	Joint Programme Initiatives
Regional Waste Management Offices	Waste industry	NESC
Repak		Rx3
Waste industry		University of Limerick
		UCD School Food and Biosystems Engineering

Source: DBEI

Areas of focus include waste prevention and management, plastic and packaging, indigenous recycling capacity, reuse and reusable alternatives, EPR waste streams, smart design, product lifecycles, Green Public Procurement.

Measures to Achieve Optimum Results

- We will work with the **Department of Further and Higher Education, Research, Innovation and Science** on the successor strategy and resultant action plans to ensure it supports research in the areas of waste and the circular economy and in particular research that provides the evidence base for informed policy making.
- We will work with government partners, research funders and enterprise agencies to identify opportunities to foster further collaboration and engagement between the waste industry and those involved in research and innovation including through the Waste Advisory Forum and to raise awareness and utilisation of the variety of research and innovation supports available within the State.
- We will seek to ensure that research priorities related to waste and the circular economy are addressed in the research strategies and prioritisation exercises of the various research funding and research performing organisations.
- We will work to improve alignment of research priorities and strategies within the State with policy and to improve dissemination activities to ensure research outcomes that underpin evidence based policy making and maximise value for money from publically funded research.
- We will build stronger linkages between DCCAE and the publically funded research centres.

Glossary of Acronyms

Glossary of Acronyms

AD	Anaerobic Digestion
AER	Annual Environmental Report
AILG	Association of Irish Local Government
ALUPRO	Aluminium Packaging Recycling Organisation Ireland
C&D	Construction and Demolition
CCMA	The County and City Managers Association
CCPC	Competition and Consumer Protection Commission
CEAP	Circular Economy Action Plan
CEWEP	Confederation of European Waste to Energy Plants
CIF	Construction Industry Federation
CIWM	Chartered Institute of Waste Management
CoR	Certificate of Registration
Cré	Composting and Anaerobic Digestion Association of Ireland
CRNI	Community Resource Network Ireland
DAFM	The Department of Agriculture and the Marine
DCCAE	The Department of Communications, Climate Action and Environment
DPER	The Department of Public Expenditure and Reform
DRS	Deposit and Return Scheme
EC	European Commission
ECJ	European Court of Justice
ELVES	End-of-Life Vehicles Environmental Services
ELVs	End-of-Life Vehicles
eNGO	Environmental Non-Governmental Organisation
EPA	Environmental Protection Agency
EPR	Extended Producer Responsibility
ERP	European Recycling Platform
EU	European Union
FSAI	Food Safety Authority of Ireland
GDPR	General Data Protection Regulation
GHG	Greenhouse Gas
GIS	Geographic Information System
GPP	Green Public Procurement
IBEC	Irish Business and Employers Confederation
ICT	Information and Communications Technology
ICTU	Irish Congress of Trade Unions
IEN	Irish Environmental Network
IFA	Irish Farmers Association
IFFPG	Irish Farm Film Producers Group
ISME	Irish Small and Medium Enterprise Association
IT	Information Technology
IWMA	Irish Waste Management Association
LA	Local Authority
MSW	Municipal Solid Waste
NDA	The National Disability Authority
NGO	Non-Governmental Organisation
NWCPO	National Waste Collection Permit Office
OEE	Office of Environmental Enforcement (EPA)
OGP	Office of Public Procurement
PET	Polyethylene Terephthalate
PMG	Price Monitoring Group
PRL	The Producer Register Ltd
PROs	Producer Responsibility Organisations
R&D	Research and Development
RAI	Restaurants Association of Ireland
RGDATA	Retail Grocery Dairy and Allied Trades Association
RWMPO	Regional Waste Management Planning Office
S.I.	Statutory Instrument
SDG	Sustainable Development Goal
SEAI	Sustainable Energy Authority of Ireland
SMEs	Small and Medium Enterprises
SRA	Soil Recovery Association
SUP	Single Use Plastic
SUPD	Single Use Plastics Directive
TFS	TransFrontier Shipment
UK	United Kingdom
UN	United Nations
US	United States
WCP	Waste Collection Permit
WEEE	Waste Electrical and Electronic Equipment
WERLA	Waste Enforcement Regional Lead Authority
WFD	Waste Framework Directive
WFP	Waste Facility Permit

Appendices

APPENDIX 1
Summary of Process for developing Waste Action Plan

Overview

On 30 December 2019 Mr. Richard Bruton TD, then Minister for Communications, Climate Action and Environment, launched a public consultation process to seek the views of the general public and interested stakeholders on the development of this Waste Action Plan.

The consultation process, which was open from 30 December 2019 until 21 February 2020, covered a range of issues relevant to the development of a Waste Action Plan such as exploring measures to assist us with achieving our EU targets (current and future) while developing a more resource efficient economy. The Department received almost 280 submissions in response to the public consultation and has commenced the process of examining these submissions in detail. The chapter on Municipal (Household and Commercial) Waste received the most comments to questions posed with 15.5% of total, followed by Single Use Plastic at 11.1% and Plastic and Packaging Waste at 8.5%. These 3 chapters accounted for 35.1% of all comments received.

Waste Advisory Group

Alongside the launch of the public consultation process a cross-sectoral Waste Action Plan Advisory Group was established to assist in the drafting of the Action Plan. The Advisory Group harnessed the potential and capacity of a broad range of sectors- public, business, environmental, and social- to guide strategic thinking and decision-making in the preparation of this iteration of national waste policy. The Group was chaired by the Department of Communications, Climate Action and Environment.

The role of the Group was to:

- Utilise professional and business acumen to provide advice on the strategic direction of waste policy and consider issues in a national and international context;
- Provide a platform in which to develop, test, review and refine ideas, scenarios and policy;
- Utilise expertise, resources and relationships of representatives and to provide data and material, where relevant, to inform discussions and ideas in the preparation of waste policy; and
- Assist and advise on alignment and linkages with other relevant initiatives/sectors and legislative requirements.

It met on seven occasions and discussed the following topics:

- The circular economy
- The citizen engagement challenge
- Plastics and packaging policy
- Deposit and Return Schemes (DRS)
- Market structure
- Food Waste
- Waste Enforcement

Terms of reference, meeting minutes and discussion papers for all meetings of the group are available on the Department's website.

List of Members of the Waste Advisory Group
The following organisations were represented at the Waste Advisory Group:

- Irish Waste Management Association (IWMA)
- Retail Action Group
- WEEE Ireland
- European Recycling Platform (ERP) Ireland
- Composting and Anaerobic Digestion Association of Ireland (Cré)
- Competition and Consumer Protection Commission (CCPC)
- Association of Irish Local Government (AILG)
- Repak
- Chartered Institute of Waste Management (CIWM)
- Irish Farm Film Producer's Group (IFFPG)
- The Rediscovery Centre
- Construction Industry Federation (CIF)
- Cement Manufacturers Ireland
- Irish Hotels Federation
- Retail Grocery Dairy and Allied Trades Association (RGDATA)
- Irish Farmers Association (IFA)
- Eastern Midlands Regional Waste Management Planning Office
- Community Resource Network Ireland (CRNI)
- Confederation of European Waste to Energy Plants Ireland (CEWEP)
- National Waste Collection Permit Office (NWCPO)

- Irish Congress of Trade Unions (ICTU)
- ELV Environmental Services (ELVES)
- Engineers Ireland
- Environmental Protection Agency (EPA)
- Irish Business and Employers Confederation (IBEC)
- Restaurants Association of Ireland
- Soil Recovery Association (SRA)
- Price Monitoring Group (PMG)
- The Producer Register Limited (PRL)
- Irish Environmental Network (IEN)
- The National Disability Authority (NDA)
- National Youth Council of Ireland
- City and County Management Association (CCMA)
- Irish Manufacturing Research
- Irish Food Packaging Alliance
- Aluminium Packaging Recycling Organisation Ireland (ALUPRO)

Advisory Group on A 'Waste Action Plan for a Circular Economy' Terms of Reference

Background

The current national waste policy as set out in 'A Resource Opportunity - Waste Management in Ireland' is due to expire in mid- 2020. Its replacement, with a current working title of a 'Waste Action Plan for a Circular Economy' will encompass many shared principles, aims and objectives of other policy initiatives including:

- Climate Action Plan;
- Project Ireland 2040;
- UN Sustainable Development Goals;
- Circular Economy Package, including the Plastics Strategy;
- Single Use Plastics Directive;
- Bio-economy; and
- DCCAE Statement of Strategy

A 'Waste Action Plan for a Circular Economy' will sit at the top of the hierarchy of statutory plans and programmes for the waste area which also includes Waste Management Plan(s), the National Waste Prevention Programme and the National Hazardous Waste Management Plan. The plan will inform future versions of those plans and provide a coherent framework in which sectoral policies, targets and objectives can be realised.

Furthermore, the new waste plan will be informed by other important developments in the sector, including the EPA Waste Characterisation Campaign Reports, the Consumer and Competition Protection Report on the 'Operation of the Household Waste Collection Market' and ongoing reports and updates from the Price Monitoring Group on Household Waste Collection and the Construction Waste Resource Group.

Public and Stakeholder Participation

To be effective waste policy needs to be strategic and ambitious. Effective public and stakeholder participation will go a long way to secure successful implementation. Therefore, a core objective of the policy development process will be to ensure that, as well as the wider public, all relevant stakeholders are consulted and encouraged to contribute to the process of policy preparation. Participation processes will be designed and structured to ensure meaningful, informed and timely engagement with the policy-making process.

Advisory Group

To assist in the production of the new action plan the Minister for Communications, Climate Action and Environment proposes to establish an Advisory Group to harness the potential and capacity of a broad range of sectors- public, business, environmental, and social- to guide strategic thinking and decision-making in the preparation of the next iteration of national waste policy. The Department will chair the meetings of the Group, which it is expected will take place monthly up to the publication of the policy which is expected in mid-2020.

Guiding principles for the Group

- Transparency and openness – all documents will be made available by Waste Policy and Resource Efficiency Division (DCCAE) to the Members and meeting reports will be promptly circulated;
- Equality and respect – all Members will be afforded equal opportunity – by the Chair and by other Members – to voice their opinion and

contribute to the work of the Group. While the Group is comprised of representatives from diverse backgrounds, there is an overriding obligation on Members to treat each other with respect at all times;
- Efficiency – it is recognised that time and resources will be limited. Therefore the work and meetings of the Advisory Group will be managed in as efficient a manner as possible and Members are requested to respect the time investment by other Members.
- Collegiality and tolerance – the Members of the Group will work together in the spirit of collegiality and tolerance.
- Common goal – the Members of the Group will work together towards a common goal of assisting in the development of Ireland's next iteration of waste policy.

Role of Advisory Group

The role of the Group was to:

- Utilise professional and business acumen to provide advice on the strategic direction of waste policy and consider issues in a national and international context;
- Provide a platform in which to develop, test, review and refine ideas, scenarios and policy;
- Utilise expertise, resources and relationships of representatives and to provide data and material, where relevant, to inform discussions and ideas in the preparation of waste policy; and
- Assist and advise on alignment and linkages with other relevant initiatives/sectors and legislative requirements.

For the purpose of clarity, DCCAE retains the role of drafting the new waste action plan for consideration by the Minister. However, this process will be informed by consultation, including consultation and discussion with the Advisory Group.

Membership and Representation

The Advisory Group will be chaired by Mr. Philip Nugent, Assistant Secretary, Natural Resources and Waste Policy, Department of Communications, Climate Action and Environment. In addition to the Chairperson, the Group will be composed of individual representatives of various relevant sectoral interests. The Group comprises a significant number of people to ensure effective representation of a broad range of sectors who are considered to have the capacity to contribute in a significant way to the preparation of national waste policy.

The Chairperson will preside at the meetings of the Advisory Group. In the Chairperson's absence meetings will be chaired by the Vice-Chairperson from DCCAE. The Group will meet monthly until June, 2020 and may convene extra meetings as required.

The Inception Meeting of the Advisory Group will take place on 31st January, 2020 and it will remain in place until a final draft of a 'Waste Action Plan for a Circular Economy' is completed.

Following the development of the new national waste action plan, the role, function and requirements of the Advisory Group will be reviewed by the Minister/ Department.

Secretariat

Secretariat services for the Advisory Group will be provided by the Waste Policy and Resource Efficiency Division of the Department (DCCAE).
In order to conduct its business efficiently and to minimise costs, the Advisory Group will seek to operate through electronic means to the greatest extent possible.

Responsibilities of the Advisory Group

The Advisory Group will be:

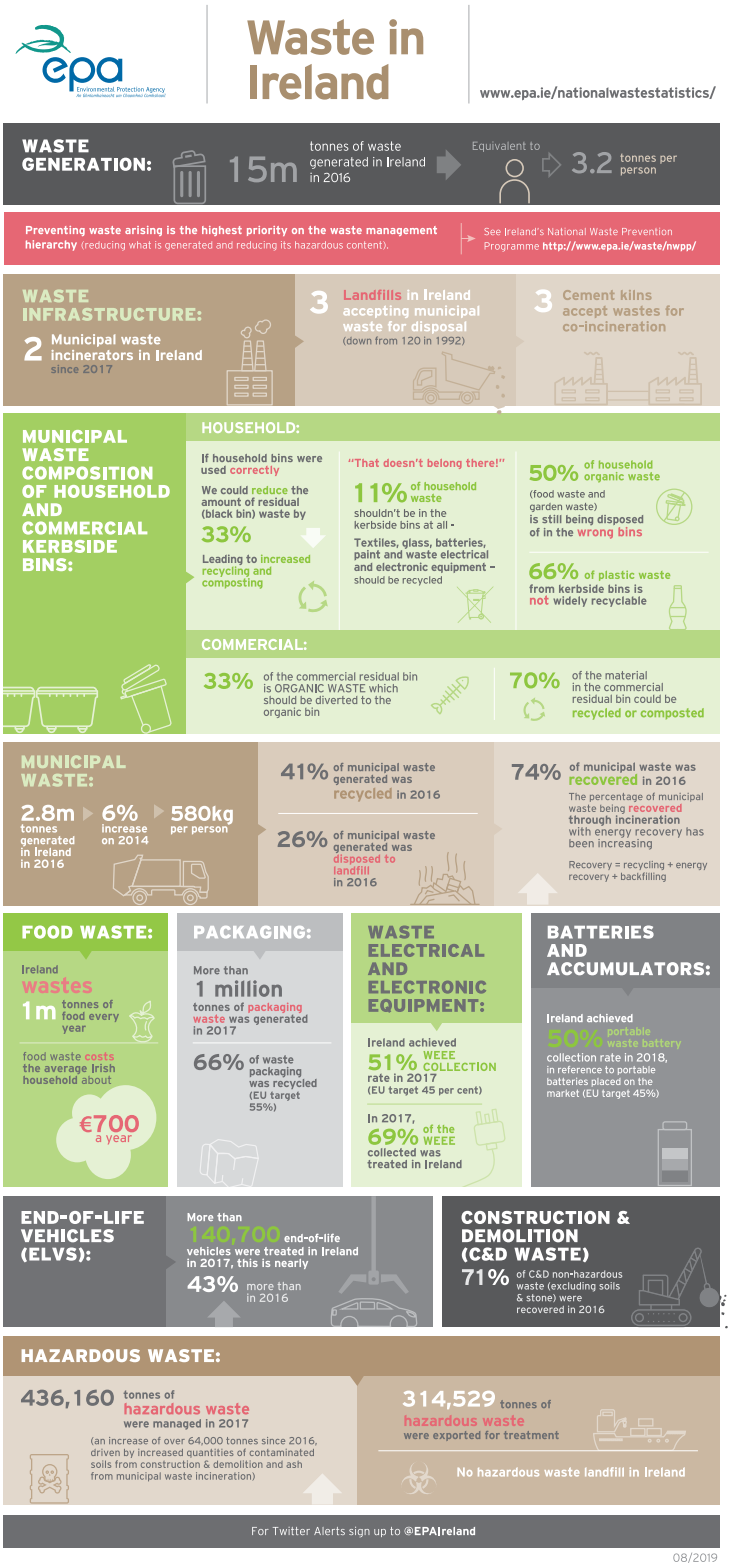
- Provided with meaningful information in a timely manner in advance of meetings;
- Given reasonable time to make recommendations; and
- Expected to operate on the basis of a collective approach to the policy development process. Whilst appointment to the Group is on the basis of knowledge, interest or representation of a sector, and this may shape input to the process, individual interests shall not supersede the role of the Advisory Group.

The members of the Advisory Group will commit to:

- Attending all scheduled Advisory Group meetings and where this is not possible, to arrange for an alternate;
- Sharing relevant information and communicating with other Advisory Group members;
- Making timely recommendations and take action so as to assist with the expedient preparation and delivery of the next iteration of national waste policy;
- Working with the Department in relation to particular areas of analysis or research required;
- Keeping confidential all matters relating to the internal workings of the Advisory Group as part of policy development process, or matters identified by other members as sensitive or not to be disclosed by any member, directly or indirectly, to any person or entity outside of membership of the Advisory Group and the organisations they represent.

APPENDIX 2
Waste Generation in Ireland – Facts and Figures

Figure 4: EPA Waste Infographic – Waste in Ireland



Source: EPA

APPENDIX 3
Institutional Arrangements

Department of Communications, Climate Action and Environment

The role of the Department of Communications, Climate Action and Environment is to provide a comprehensive legislative and waste policy framework through which the relevant environmental regulatory bodies, such as LAs and the Environmental Protection Agency, operate.

Environmental Protection Agency

The EPA is an independent public body established under the Environmental Protection Agency Act, 1992. Other legal instruments from which they derive their mandate include the Waste Management Act, 1996, the Protection of the Environment Act, 2003 and Radiological Protection (Miscellaneous Provisions) Act 2014.

The Agency has a wide range of functions to protect the environment and its primary responsibilities include:

- Environmental licensing
- Enforcement of environmental law
- Environmental planning, education and guidance
- Monitoring, analysing and reporting on the environment
- Regulating Ireland's greenhouse gas emissions
- Environmental research development
- Strategic environmental assessment
- National Waste Prevention Programme
- Waste management, including licensing, enforcement and guidance
- Radiological Protection

Regional Waste Management Planning Offices (RWMPOs)

There are 3 Waste Management Planning Lead Authorities:

- Southern Region: Limerick and Tipperary County Council
- Eastern Midlands Region: Dublin City Council
- Connacht-Ulster Region: Mayo County Council.

The role of the RWMPOs is to formulate and co-ordinate the implementation of the Waste Management Plans for their regions. The Waste Management Plans are statutory documents underpinned by national and EU legislation. The current set of plans cover the period 2015-2021. The work of the RWMPOs includes:

- Providing education and advice to households and communities to empower them to reduce, reuse and recycle.
- Working with LAs to achieve waste prevention and resource efficiency targets.
- Working with business to rethink their approach to waste management, by viewing waste as valuable material resources.
- Partnering with a range of stakeholders including LAs, government bodies, waste industry operators, environmental organisations, reuse organisations, research institutions and so on, to research and devise sustainable solutions for specific waste streams.
- Development and roll out of the mywaste.ie portal

Waste Enforcement Regional Lead Authorities (WERLAs)

In 2015, three Waste Enforcement Regional Lead Authorities (WERLAs) were established:

- Connacht / Ulster Region - Leitrim and Donegal County Councils
- Eastern Midlands Region - Dublin City Council
- Southern Region - Cork County Council

The WERLAs have responsibility for coordinating waste enforcement actions within regions, setting priorities and common objectives for waste enforcement, ensuring consistent enforcement of waste legislation across the three existing waste management planning regions while still leaving Local Authority personnel as first responders on the ground to specific breaches of waste legislation.

The work of the WERLAs is overseen by a National Steering Committee which includes representatives from a wide range of regulatory authorities. National

waste enforcement priorities are set by the committee and drive consistency at a central level.

National Waste Collection Permit Office (NWCPO)

Offaly County Council was appointed as the National Waste Collection Permit Office and the office has been in operation since February 2012. The NWCPO is responsible for the issue and review of all waste collection permits nationally on behalf of all waste management regions. The NWCPO also hosts a central register of all waste facility permits and certificates of registration granted, reviewed, revoked and expired.

National Transfrontier Shipment Office

From 12 July 2007, Dublin City Council is designated as the National Competent Authority for the export, import and transit of waste shipments under **S.I. No. 419 of 2007 Waste Management (Shipments of Waste) Regulations, 2007**.

These Regulations gave effect to provisions contained in Commission Regulation (EC) No. 1013/2006 on transfrontier shipments of waste, which sets out new notification procedures, specifies revised waste listings and strengthens enforcement provisions in relation to waste movements within, into and out of the EU.

All transfrontier shipments of waste originating in any Local Authority area in the State after the 12 July 2007, that are subject to the prior written notification procedures must be notified to and through Dublin City Council at the National TFS Office established to implement and enforce the Regulations.

Extended Producer Responsibility (EPR) Compliance Schemes

Under an EPR model producers assume responsibility for the collection or taking back of used goods which are then sorted and prepared for end-of-use treatment. Producers in Ireland have developed a compliance scheme approach to meet general objectives which would otherwise be imposed by detailed regulatory requirements. Producer Responsibility Organisations (PROs) offer a service that enables those participating producers to comply with their environmental obligations. The PROs operate under an approval granted by the Minister. Businesses which decide not to participate in a compliance scheme must take an alternative route of self-compliance -- they cannot opt out of their responsibilities.

Appendix 4
Research and Innovation

The EPA research programme

Since 1994, the EPA has funded research that has increased national understanding of our environment, the challenges it faces and responses to these. The EPA Research Programme is a Government of Ireland initiative funded by the Department of Communications, Climate Action and Environment.

The EPA Research Strategy 2014-2020 included a priority area requiring concerted national action 'Reducing waste generation and treating waste as a resource in line with national and European waste policies to move towards a more resource-efficient and circular economy'.

A range of research projects have been undertaken over the life of the strategy related to waste including looking at the reduction of commercial food waste, characterising dairy waste and the potential for whey fermentation and indium recovery from end-of-life liquid crystal displays (LCDs). A full list of the published research papers can be found on the EPA website.

The EPA is currently developing its next research strategy and how research can deliver the knowledge base to inform strong evidence based policymaking. DCCAE will continue to engage with EPA during this process to support policy alignment and effective dissemination of research outputs.

The EPA also manages the Green Enterprise: Innovation for a Circular Economy funding programme under the National Waste Prevention Programme, which is specific to the policy area of the circular economy and aims to develop innovative practical applications and solutions that stimulate the circular economy in Ireland.

Research Centres

SFI Research Centres

These centres link scientists and engineers in partnerships across academia and industry to address crucial research questions. A number of these research centres undertake research that is directly or indirectly related to waste and the Circular Economy such as BiOrbic which looks at the role of materials in the creation of products and the role of the bioeconomy and natural materials and Amber looking at advanced materials and bioengineering.

Enterprise Ireland Research Centres

Designed to respond rapidly to industry defined needs and conduct market-relevant research and development (R&D) in partnership with collaborating groups of companies. One specific technology centre – the Irish Manufacturing Research (IMR) Centre has made inroads to the adoption of processes.

Irish Manufacturing Research (IMR) Centre – Sustainable Manufacturing

IMR helps industry develop impactful initiatives around sustainability, including materials recycling and re-use, remanufacturing, industrial energy efficiency and waste-water recycling, and establishing a national circular economy platform.

One IMR project, Circuléire, is a €4.5 million public-private partnership co-created by Irish Manufacturing Research (Secretariat), and three Strategic Partners; DCCAE, the EPA, EIT Climate-KIC and 25 Founding Industry Members. Circuléire is the first cross-sectoral industry-led innovation network dedicated to closing the circular innovation gap and accelerating the net-zero carbon circular economy in Ireland.

Between 2020 and 2022, Circuléire will take manufacturers and their supply-chains on a journey from linear to circular business models delivering significant reductions in greenhouse gas emissions and waste production.

Challenge Funding

Challenge-based funding is a solution-focused approach to research funding that uses prizes, strict timelines, teamwork and competition to direct research activities at ambitious societal problems. It has been a growing trend in research funding in recent years and a number of projects relevant to waste are now active in Ireland.

Enterprise Ireland - Small Business Innovation Research

The Small Business Innovation Research (SBIR) programme enables public sector bodies to connect with small businesses to provide innovative solutions to societal problems by purchasing research to stimulate innovation, when goods or services are currently not available in the marketplace.

SBIR Ireland, administered by Enterprise Ireland, seeks to drive innovation across all sections of the public sector via robust engagement with technology rich companies and organisations. It has addressed a number of waste related challenges including illegal dumping with Dublin City Council allowing the Council to partner with a range of innovative small business to look at addressing illegal dumping from a variety of novel perspectives.

The EPA has recently launched a challenge called "Innovating for Soft Plastic in a Circular Economy" under SBIR focused on reducing/eliminating soft plastic waste generated through the provision of school meals in Ireland.

SFI Challenge Based Funding

SFI has established a Challenge funding mechanism under the SFI Future Innovator Prize. Two new SFI Future Innovator Prizes have been launched in the following areas relevant to waste and the circular economy:

- The SFI Food Challenge seeks applications from interdisciplinary teams proposing novel, potentially disruptive, sustainable STEM-led solutions to reduce food loss and waste across the full breadth of the food supply chain from "farm to fork".
- The SFI Plastics Challenge seeks innovative STEM-led solutions that will enable the sustainable use of plastics in a circular economy; that will restore and preserve our oceans' health; and that will maximise how we use the Earth's finite resources.

Disruptive Technologies Innovation Fund (DTIF)

The Disruptive Technologies Innovation Fund (DTIF) is a €500 million fund, which extends from 2018 to 2027, established as part of the National Development Plan under Project Ireland 2040. The DTIF also forms a key part of Future Jobs Ireland and supports in particular the delivery of Pillar 1, embracing innovation and technological change. It is available for collaborative projects between industry and the research sector seeking investment in the development and deployment of disruptive innovative technologies and applications, on a commercial basis, targeted at tackling national and global challenges. SME participation is a mandatory requirement for each collaborative project.

One of these projects progressed, "Sustainable Bio-Renewable Energy from Wastewater (S-BREW)", has a waste focus. The S-BREW consortium have come together to develop a wastewater to clean water, plus energy solution using a unique, patented low temperature anaerobic digestion technology for on-site deployment at global food & drinks facilities. This Biowave treatment system can break down organic by-products from the agri-food industry for the creation of renewable energy in the form of biogas, while minimising waste. The project offers a double benefit: displacing current energy-intensive wastewater treatment systems while simultaneously providing a sustainable source of high-grade biogas, contributing to the supply of sustainable energy.

Research and Development Supports

Enterprise Ireland (EI) provides a range of Research, Development and Innovation (RDI) supports for indigenous Irish enterprises of all sizes. These supports, while not solely environmentally focused, typically contain elements to drive innovation and more efficient use of resources and supports projects investing in technology for clean, efficient waste and energy processes, among others. These supports/programmes include:

- **Innovation Vouchers (€3.6 million budget for 2020)** worth €5,000 to small and medium sized companies to introduce them to innovation, linking them with a network of 38 knowledge providers

- **Innovation Partnerships (€12.69 million budget for 2020)** - financial support to companies who engage in collaborative research projects with Irish Universities and Institutes of Technology with Enterprise Ireland providing grants of up to 80% towards eligible costs of the research project.
- **Technology Gateways (€8.3 million budget for 2020)** provide business development resources, including equipment, to the Institutes of Technology (IoTs) to help them interact with industry on a local, regional and national basis in order to develop and manage new RD&I projects which IoTs have the capability to deliver on. For example, the Applied Polymer Technologies (APT) Gateway facilitated Wellman Internationals development of new novel PET based formulations which will utilise sustainable materials.
- **R&D Grant (€24.95 million budget for 2020)** provides support for research, development and technological innovation (RD&I) relevant at all stages of company development and enable companies to progress from undertaking an initial research project to high level innovation and RD&I activity. This runs from standard R&D grants to Business Process Innovation grants and small quick turnaround grants through the Agile Innovation Fund.

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