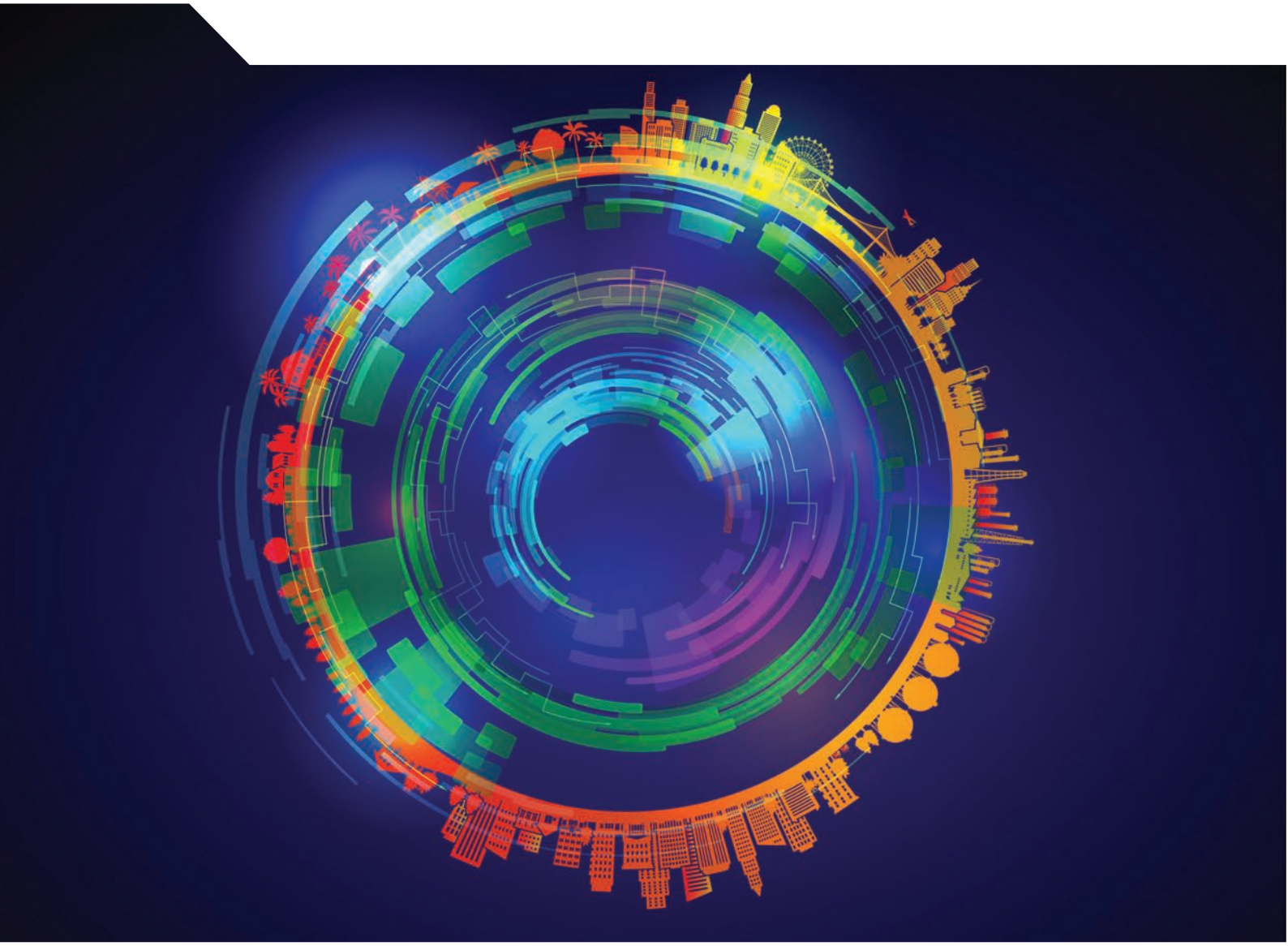
OECD Urban Studies

The Circular Economy in Ireland



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BETTER POLICIES FOR BETTER LIVES

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Preface

Around the globe, governments at all levels are accelerating climate action. The urgency for action on the green transition was well demonstrated at the COP26 in 2021, which has been further heightened by the need to strengthen energy security in the wake of the war in Ukraine. Whilst first and foremost a humanitarian crisis, the war has also exacerbated global pressures that pre-date it, including from rapidly rising energy prices, shortages of raw materials, and disruptions in value chains. These are already beginning to have impacts on production and consumption patterns that are likely to be long lasting. In turn, they are also accelerating the momentum towards the circular economy, due to its significant potential to improve resource efficiency and resilience, and its embodiment of clean energy sources.

Ireland is very much at the forefront of this acceleration, as witnessed by the Irish government's Waste Action Plan for a Circular Economy (2020-2025) and its Whole of Government Circular Economy Strategy (2022).

However, the circular economy has a strong spatial dimension and needs to be a shared responsibility across levels of government, especially if its full benefits, including on local jobs and production, are to be realised. Both cities and rural areas need to contribute to this transition to make it happen. Similarly, other local actors such as SMEs, social enterprises, knowledge institutions and universities also have a critical role to play, not least in driving innovation, education and research as key engines for an effective transformation of business and behavioural models that deliver economic and social benefits.

This report reflects the outcome of a two-year policy dialogue with more than 100 stakeholders, including from beyond the traditional waste sector, and draws on the expertise and guidance of international peer reviewers. It comes at a critical time for Ireland in the development of its circular economy policy. Initiated in 2020, the policy dialogue has influenced the Whole of Government Circular Economy Strategy, as well as other new and forthcoming plans and programmes such as the National Waste Management Plan and the Environmental Protection Agency's Circular Economy Programme. The report offers a set of recommendations and concrete actions that Ireland can undertake to further promote, facilitate and enable the transition to the circular economy, capitalising on its political leadership and commitment to develop multi-sectoral approaches that can drive the shift to sustainable pathways.

The OECD Centre for Entrepreneurship, SMEs, Regions and Cities (CFE) and the Department of the Environment, Climate and Communications (DECC) of Ireland are proud of this collective journey and look forward to continued collaboration to make the circular economy part of the solution towards healthier, less resource-wasteful and more environmentally aware societies.

Lamia Kamal-Chaoui

Director, Centre for Entrepreneurship, SMEs, Regions and Cities, OECD

Ossian Smyth TD

Minister of State with responsibility for Communications and Circular Economy, Ireland

Foreword

The circular economy has gained traction in Ireland's political agenda, mainly as a result of European Commission agendas such as the EU Green Deal and Circular Economy Package. Unprecedented shocks such as Brexit, the COVID-19 pandemic and more recently the war in Ukraine have further emphasised the importance of shifting towards carbon-neutral economies with sustainable production and consumption patterns. Ireland's rapid population growth, which is almost double the OECD average (1% per year compared to 0.6%, between 2013 and 2018) further raises the urgency of efficient resources management, in line with the Irish government's goal to achieve carbon neutrality by 2050.

While Ireland has made good progress, the country's circular economy policy could be further strengthened in three priority areas. First, move from a narrow focus on waste to a broader view of resources management to leverage the circular economy as a cross-sectoral driver of economic growth, job creation, social well-being and environmental protection. Second, enlarge the focus beyond recycling and recovery to embrace waste prevention in food, the built environment and other sectors, and repairing and reusing material. Third, adopt a place-based approach to the circular economy to respond to urban challenges related to service provision and infrastructure, to close material loops in waste, water and energy, as well as strengthen urban-rural linkages.

Through this project, Ireland has made a valuable contribution to the OECD Programme on the Circular Economy in Cities and Regions, which supports national, regional and local governments with evidence-based analysis, multi-stakeholder dialogues, policy recommendations and customised action plans. The programme has enabled knowledge sharing and the exchange of solutions to common challenges and opportunities among circular economy pioneers, including Glasgow (United Kingdom), Granada (Spain), Groningen (Netherlands), Montreal (Canada), Tallinn (Estonia), Umeå (Sweden), and Valladolid (Spain).

This report supports the implementation of the 2021-2022 Programme of Work and Budget of the OECD Regional Development Policy Committee. The report was approved by written procedure under cote [CFE/RDPC/URB(2022)2] on 30 March 2022.

Acknowledgements

This report was prepared by the OECD Centre for Entrepreneurship, SMEs, Regions and Cities (CFE) led by Lamia Kamal-Chaoui, Director, as part of the Programme of Work and Budget of the Regional Development Policy Committee (RDPC). It is the result of a two-year policy dialogue with more than 100 stakeholders from the public, private and not-for-profit sectors across Ireland and with the Department of the Environment, Climate and Communications (DECC) of Ireland.

The report and underlying policy dialogue were led by Oriana Romano, Head of the Water Governance and Circular Economy Unit, under the supervision of Aziza Akhmouch, Head of the Cities, Urban Policies and Sustainable Development Division in the CFE. The report was drafted and co-ordinated by Oriana Romano, Head of Unit, and Juliette Lassman, Policy Analyst. Andrea Accorigi, former Policy Analyst, contributed to the first draft of the report. Ander Eizaguirre, Policy Analyst, contributed to the report with written input and participation in the virtual missions to Ireland; he and Melissa Kerim-Dikeni, Policy Analyst, provided support with the organisation of the policy seminar. Peter Borkey, Principal Administrator, and Andrew Brown, Policy Analyst, OECD Environment Directorate provided comments on the use of economic instruments.

The OECD Secretariat is grateful for the high level of commitment and support from the DECC, notably from Philip Nugent, Assistant Secretary, Environmental Protection and Circular Economy, as well as from the core local team led by Bernie Kiely, Principal Officer, Circular Economy Materials, including: Fiona Hill, Executive Officer, Circular Economy Strategic Policy; Cathal Comey, former Higher Executive Officer, Circular Economy Strategic Policy; as well as Leslie Carberry, Principal Officer, Circular Economy Strategic Policy. Warm thanks are also extended to the Environmental Protection Agency (EPA), namely to: Shane Colgan, formerly Manager, Resource Efficiency Unit; Tara Higgins, Senior Manager, Waste Statistics Team; Odile LeBolloch, Food Waste Prevention Team Lead; and Mary Frances Rochford, Programme Manager, Climate Change and Circular Economy Programme. Special thanks are also conveyed to representatives from Regional Waste Management Planning Offices and local authorities, namely Philippa King, Regional Co-ordinator, Southern Waste Region, and Joanne Rourke, Regional Resource Efficiency Officer, Eastern-Midlands Regional Waste Management Plan Office, Dublin City Council, as well as to the Rediscovery Centre, in particular to Claire Downey, Policy and Research Director, and Sarah Miller, Chief Executive.

The policy dialogue benefitted from the insights of peer reviewers, who are warmly thanked for sharing their valuable expertise, namely: Andrea Accorigi, Policy Officer, Directorate-General for Research and Innovation, European Commission; Laura Blair, Sector Manager, Cities and Regions, Zero Waste Scotland (ZWS); Lewis Douglas, Technical Officer, Glasgow City Council; Colin Hughes, Policy Officer, Sustainability, Glasgow City Council; Amanda Ingram, Bioeconomy Sector Manager, ZWS; Colin Kennedy, Manufacturing Sector Manager, ZWS; Cheryl McCulloch, Senior Project Manager, Glasgow Chamber of Commerce; and Rebecca Rickets, Senior Project Advisor and founding member, Circular Glasgow, Glasgow Chamber of Commerce.

This report builds on interviews conducted during three online missions (10-12 March 2020, 12-15 October 2020 and 6-9 July 2021) and a policy seminar (19 October 2021), as well as insights from an OECD Survey

on the Circular Economy in Cities and Regions and desk research. Interim findings and progress results were presented at the 2nd OECD Roundtable on the Circular Economy in Cities and Regions (31 March 2020), the 3rd OECD Roundtable on the Circular Economy in Cities and Regions (18-19 May 2021) and the EPA Circular Economy Conference (15-16 September 2021).

Stakeholders are also warmly thanked for their written comments, namely: government departments and agencies (Department of Agriculture, Food and the Marine [DAFM], Department of Business, Enterprise and Innovation [DBEI], Department of Enterprise, Trade and Employment [DETE], Department of Finance, Department of Housing, Local Government and Heritage [DHLGH] and Transport Infrastructure Ireland [TII]) and stakeholders from Arup, Beauparc, BIM, Cement Manufacturers Ireland, Chambers Ireland, Circular Bioeconomy Cluster South-West (University of Munster), CIRCULÉIRE, Community Resources Network Ireland (CRNI), CRÉ, Dublin City Council, FoodCloud, Galway-Mayo Institute of Technology (GMIT), Ibec, Irish Waste Management Association (IWMA), Irish Water, National College of Art and Design, NewERA, Repak, University College Cork and WEEE Ireland. The full list of stakeholders can be found in Annex A.

The report was submitted to RDPC delegates for approval by written procedure under the cote CFE/RDPC/URB(2022)2. The final version was edited and formatted by Eleonore Morena, and François Iglesias and Pilar Philip prepared the manuscript for publication.

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Abbreviations and acronyms

CAP	Climate Action Plan
CARO	Climate Action Regional Office
CCPC	Competition and Consumer Protection Commission
CEAP	EU Circular Economy Action Plan
CEIGS	Circular Economy Innovation Grant Scheme
CRNI	Community Resources Network Ireland
CSO	Central Statistics Office
CTC	Clean Technology Centre
DAFM	Department for Agriculture, Food and the Marine
DBEI	Department of Business, Enterprise and Innovation
DCCAE	Department of Communications, Climate Action and the Environment
DECC	Department of the Environment, Climate and Communications (previously DCCAE)
DETE	Department of Enterprise, Trade and Employment
DFHERIS	Department of Further and Higher Education, Research, Innovation and Science
DHLGH	Department of Housing, Local Government and Heritage
DoE	Department of Education
DoT	Department of Transport
DPER	Department of Public Expenditure and Reform
DRCD	Department of Rural and Community Development
DRS	Deposit Return Scheme
EC	European Commission
EIB	European Investment Bank
EPA	Environmental Protection Agency
EPR	Extended producer responsibility
EU	European Union
EU ETS	European Union Emissions Trading Scheme
GDP	Gross domestic product
GHG	Greenhouse gas
GMIT	Galway-Mayo Institute of Technology
GPP	Green public procurement
IEA	International Energy Agency
IGBC	Irish Green Building Council
IWMA	Irish Waste Management Association
LAPN	Local Authority Prevention Network
LEO	Local Enterprise Office
MSW	Municipal solid waste
NDP	National Development Plan

NPF	National Planning Framework
NSAI	National Standards Authority of Ireland
NWCPO	National Waste Collection Permit Office
NWPP	National Waste Prevention Programme
OECD	Organisation for Economic Co-operation and Development
OGP	Office of Government Procurement
PRO	Producer responsibility organisation
R&D	Research and development
RSES	Regional Spatial and Economic Strategy
RWMPO	Regional Waste Management Planning Office
SDGs	UN Sustainable Development Goals
TII	Transport Infrastructure Ireland
UK	United Kingdom
UN	United Nations
WAPCE	Waste Action Plan for a Circular Economy
WEEE	Waste electrical and electronic equipment

Executive summary

Drivers for the circular economy in Ireland

Ireland is at a turning point in its transition towards the circular economy, which aims to prevent waste and pollution, keep resources in use for as long as possible and transform waste into resources. Driven by international and European Union (EU) agendas on climate and waste, particularly the Paris Agreement, the EU Green Deal and the EU Circular Economy Package, Ireland recently developed a Waste Action Plan for a Circular Economy (2020-2025) and a Whole of Government Circular Economy Strategy (2022). It is also preparing the ground for a Circular Economy Bill.

With a circular material use rate of just 2% in 2020 (relative to an EU average of 12.8%), Ireland has significant scope for progress. Recycling rates for municipal solid waste for the past 5 years have stagnated at around 40% (compared to EU recycling targets of 55% by 2025) and waste generation has been increasing since the recovery from the 2008 economic crisis. Preventing waste, repairing, reusing and recycling holds great promise for the Irish economy in terms of job creation, greenhouse gas (GHG) emissions reduction and environmental sustainability. Already in 2014, the Clean Technology Centre estimated that a 5% increase in resource efficiency would result in annual savings of EUR 2.3 billion for the Irish economy.

Recent events affecting the Irish economy have driven further reflections on resource efficiency and supply chains. Brexit heightened awareness of the limitations of global supply chains, particularly in the agri-food sector, which exported up to 40% of its output to the United Kingdom pre-Brexit. Across sectors, rising energy prices are also driving momentum for greater energy efficiency. Public spending in response to the COVID-19 pandemic has strengthened the government's ambition for the green transition. In 2021, around one-third of the EUR 10 billion investment envelope in Ireland's State Budget was allocated to sustainable transport and water infrastructure, energy efficiency and renewables, landfill remediation and peatland rehabilitation.

Demographic changes, urbanisation patterns and climate change will also play a role in the future of resources management in Ireland. Ireland's population of 4.9 million is growing almost twice as fast as the OECD average (1% per year, compared to 0.6%, between 2013 and 2018), calling for an estimated 300 000 new homes by 2030. Between 2013 and 2019, construction grew 8 times faster in Ireland than in the EU27, generating environmental consequences as residential and commercial buildings account for 15% of GHG emissions, and construction waste accounted for 15% of total waste generation. Applying circular economy principles to the built environment, including using the existing building stock more efficiently, designing modular buildings and reusing construction materials, can contribute to achieving carbon neutrality by 2050, as set out in the Climate Action Plan.

Unlocking the potential of the circular economy in Ireland

The circular economy is not entirely new in Ireland, as the past two decades have seen a growing number of government-led waste prevention and circular economy initiatives. Levies on plastic bags and waste

were successful in preventing plastic bag use (-97.5% between 2001 and 2018) and drastically reducing landfilling (from 80% of municipal waste in 2002 to just over 10% in 2018). Since 2004, the Environmental Protection Agency (EPA) National Waste Prevention Programme has been instrumental in raising awareness, improving know-how and through engagement with a wide range of stakeholders on waste prevention. The EPA's new Circular Economy Programme will co-ordinate circular economy initiatives across levels of government and stakeholders. A set of government-supported funding schemes, such as the EPA's Green Enterprise Fund (EUR 625 000 in 2021), the Department of the Environment, Climate and Communications (DECC) Circular Economy Innovation Grant Scheme (EUR 490 000 in 2021) and CIRCULÉIRE's innovation fund (EUR 1.5 million between 2020 and 2022) supports circular economy solutions across businesses, social enterprises and community-based organisations. Recognising the role of public procurement (which accounts for around 10-12% of Irish gross domestic product annually) in the circular and green transition, the national government has supported capacity building on green public procurement (GPP) across levels of government.

Cities in Ireland are home to several circular initiatives and local authorities are well placed to lead the transition from the bottom up. The 2014 Local Government Reform Act granted new responsibilities to local authorities that include planning, economic and community development. As such, local authorities can identify, map and provide support for circular initiatives among local businesses and civil society, bridging gaps between sectors and key players. For instance, Dublin City Council's Corporate Plan 2020-2024 identified the circular economy as one of the sectors to support, along with green business, tourism and food. With support from the EPA, Monaghan County Council developed the RepairMyStuff website, an online platform that connects people with local repair businesses.

Ireland has three Regional Waste Management Planning Offices (Southern, Eastern-Midlands and Connacht-Ulster) responsible for co-ordinating the implementation of statutory regional Waste Management Plans with local authorities. However, by the end of 2022, Ireland will move from regional Waste Management Plans for each of the three regional offices to a National Waste Management Plan for a Circular Economy 2022-2028 setting the same targets for all three regions. The regional offices will continue co-ordinating the implementation of the Plan at the local authority level, as well as supporting circular economy businesses (e.g. Bounce Back Recycling), providing upcycling schemes (e.g. for bicycles, toys and clothes), raising awareness on waste (e.g. MyWaste.ie information platform), and educating a range of stakeholders on circular economy (e.g. Schools Composting Project), among others.

The shift to a circular economy can also help strengthen urban-rural linkages in Ireland, where 75% of the territory is farmland and 40% of the population live in the capital city, Dublin. Farmers' markets, co-operative stores in cities and towns, food distribution networks in neighborhoods and community-supported agriculture are well-established in Ireland and contribute to narrowing food loops. More broadly, non-governmental stakeholders play a key role in Ireland's circular transition. Businesses, including small- and medium-sized enterprises (SMEs) and social enterprises, drive reuse, repair, remanufacturing and recycling practices, while knowledge institutions and universities carry out research and provide education and training on the circular economy.

Main governance challenges for Ireland's transition towards the circular economy

Ireland's circular economy policy needs to overcome three main obstacles. First, Ireland has a sectoral view of the circular economy, mainly based on waste, rather than a broader view of resource management and a holistic approach to leverage the circular economy as a cross-sectoral driver of economic growth, job creation, social well-being and environmental protection. Second, Ireland's current approach tends to focus on recycling and recovery rather than preventing, repairing and reusing. Third, there is a lack of place-based considerations, as consolidating three regional Waste Management Plans into a single

National Waste Management Plan for a Circular Economy may fail to account for local specificities, such as differences in economic activities, income, population density and access to services.

Ireland is also facing regulatory gaps related to lengthy and unreliable licensing processes, a lack of circular criteria in green public procurement, and limited government oversight of the waste sector. Funding gaps relate to the absence of a clear and coherent funding framework for the circular economy that also considers private investment, and limited use of price-based incentives. Relevant government departments, agencies and local authorities are still building the technical expertise and human resources required to lead the circular transition, while capacity gaps among Irish SMEs are hampering the adoption of circular practices and applications for funding. Finally, there is limited awareness and understanding of the costs and benefits of a circular economy among Irish businesses and civil society. Across sectors, businesses are facing operational, informational and legislative barriers, while knowledge institutions are confronted with challenges in applying for research and innovation grants and limited collaboration with policy makers.

Policy recommendations to make the transition happen

The government of Ireland can play a significant role as a promoter, facilitator and enabler of the circular economy transition. This requires a collective and co-ordinated approach across all stakeholders and levels of government.

To promote the circular economy, the national government can:

- Clarify roles and responsibilities for circular economy policy making and implementation across levels of government by: identifying the entities responsible for the achievement of the different objectives of the Whole of Government Circular Economy Strategy and enforcement mechanisms; considering placing the Strategy under the oversight of the Department of the Taoiseach, the Prime Minister of Ireland, as is the case for the Climate Action Plan; making sure that other government departments are involved in circular economy policy making, notably via the Circular Economy Working Group; consulting the Department of Finance on decisions related to the implementation of the Strategy; clarifying the role of Regional Assemblies and broadening the role of local authorities in circular economy policy implementation.
- Complement the Whole of Government Circular Economy Strategy with i) an analysis of stocks and flows of materials; ii) a mapping of existing circular economy-related initiatives; iii) clear objectives, timelines and actions; iv) a dedicated budget; v) a shared vision with stakeholders; vi) a monitoring framework to measure progress and allow adjustments in the second phase based on evidence on what worked, what did not work and what can be improved.
- Raise awareness of and build trust in the circular economy through a national circular economy online platform, targeted communication campaigns, and incentives for behavioural change, such as certificates, labels and nudging.

To facilitate collaboration among a wide range of actors to realise the full potential of the circular economy, the national government can:

- Establish horizontal co-ordination to align objectives, share information, identify synergies and avoid duplications, through the activation of the inter-departmental Circular Economy Working Group to identify how circular economy principles can be applied to different sectoral policies to reduce waste, improve resource efficiency, create jobs and improve access to services; as well as better co-ordination with government departments and agencies setting standards.
- Implement formal co-ordination mechanisms between local authorities and the DECC and EPA respectively, building on current initiatives such as the Local Authority Prevention Network

(LAPN) but going beyond the focus on waste; and adapt and extend current regional waste management planning co-ordination mechanisms between the DECC, EPA and local authorities, such as Regional Steering Committees and Regional Operations and Task Groups to the circular economy for effective multi-level co-ordination.

- Foster policy coherence and transcend silos by enhancing synergies and complementarity between the Circular Economy Strategy and the Climate Action Plan, as well as other relevant policy documents (e.g. the National Planning Framework, Enterprise strategy and Bioeconomy policy).
- Facilitate collaboration between public, private and non-profit actors on the circular economy by introducing stakeholder coordination mechanisms that are broader than public consultations (e.g. representation, partnerships or co-decision); and broaden the current sectoral focus on waste by formally including new stakeholder groups such as designers, standard-setters and the research community in the Circular Economy Advisory Group.
- Leverage territorial specificities for the circular economy by facilitating local demonstration projects and urban-rural linkages, for example by transforming urban biowaste (e.g. food waste) into input for rural agriculture (e.g. bio-based fertiliser), and create repair workshops (e.g. for bicycles) and reuse facilities (e.g. reuse centres) among other initiatives to make repair and reuse easy.

To enable the necessary governance and economic conditions for the circular economy transition, the national government can:

- Make the legislative and regulatory framework fit for the circular economy by making regulation conducive to ecodesign, repair, reuse and remanufacturing; streamlining regulatory processes for reusing material considered as waste through end-of-waste and by-product processes; broadening extended producer responsibility (EPR) to new waste streams and improving existing EPR schemes to facilitate reuse; mandating Resource and Waste Management Plans, which are currently recommended on a voluntary basis, for all construction and demolition projects; and ensuring that circular criteria are included alongside green criteria in GPP.
- Use economic tools to incentivise the transition to a circular economy, for example by extending the deposit return schemes (DRS) to cover glass and the “latte levy” (on single-use cups) to other single-use containers in retail and value chains, and identifying and removing environmentally harmful subsidies preventing the application of the waste hierarchy across sectors.
- Set up a clear funding framework for the circular economy and assist local authorities in supporting and scaling up small circular initiatives by setting up dedicated local funding. The DECC could support private investment in the circular economy with alternative funding mechanisms, such as crowdfunding, leasing, equity participation, grants, loan guarantees, green bonds and loans for circular economy projects and businesses, and leverage EU funds.
- Adapt human resources to the challenges at hand by extending current capacity building programmes to the DECC and its Circular Economy Unit, as well as strengthening local authorities’ capacity for local circular economy policy implementation, to enable them to take an active role in the transition. For businesses, workers and private investors, the government can design and implement sectoral circular economy training and toolkits for workers and businesses (especially SMEs) on the circular economy, in partnership with CIRCULÉIRE, the Rediscovery Centre, Ibec and Chambers Ireland, for instance. For civil society, particularly youth, the government can integrate circularity into first, second and third-level education curricula to build awareness of and foster skills for a circular economy.
- Support market innovation and business development with different initiatives, including the creation of innovation labs as open innovation ecosystems, the establishment of a one-stop-

shop for information on the circular economy for businesses, especially SMEs, and the introduction of tailored advisory services to support project promoters in making circular economy initiatives commercially viable.

- Develop a national circular economy information system to monitor and adjust policy, by harmonising data collection among data providers, expanding data collection from waste-related data to environmental, economic and social data, and collecting locally disaggregated and sectoral data, particularly in key sectors for the circular transition in Ireland (e.g. food and the built environment) to inform circular economy policy.
- Track progress on the achievement of the targets defined by the Strategy, as well as on the implementation of governance frameworks required for the circular economy transition, by inviting stakeholders to take part in regular (e.g. annual) assessments.

1 Socio-economic and environmental drivers of the circular economy in Ireland

This chapter provides an overview of the rationale for the circular transition in Ireland by analysing the main socio-economic and environmental trends and drivers. Global sustainability agendas such as the United Nations (UN) Sustainable Development Goals (SDGs), the Paris Agreement and the European Green Deal are key sources of inspiration and guidance for Ireland's climate targets, which the transition to a circular economy can help achieve.

The circular economy and the COVID-19 pandemic: Challenges and opportunities

As most other countries across the world, Ireland has been hit by the COVID-19 pandemic, which stimulated a reflection on resource efficiency and value chains. With 1 238 deaths per million inhabitants as of February 2022, Ireland is the fourth-least affected country by COVID-19 in the European Economic Area (Worldometer, 2022[1]). Real gross domestic product (GDP) contracted by 3.2% in 2020 and private consumption in real terms dropped by 13.2% but the Irish economy grew 15.2% in 2021. The pace of GDP growth in Ireland is expected to slow to 5.7% in 2022 and 3.9% in 2023 (OECD, 2021[2]). The disruption in global supply chains caused by the COVID-19 pandemic highlighted the benefits of shorter supply chains, further driving the Irish government's willingness to push the circular economy agenda forward. In addition, by keeping materials in use for as long as possible and designing out waste and pollution, the shift to a circular economy (Box 1.1) in the recovery from COVID-19 would enable economic growth and environmental pressure to decouple (OECD, 2020[3]).

The unprecedented amount of public spending and investment occurring in Ireland in the wake of the pandemic should strive to avoid linear lock-in and align with longer-term government strategies. With a budget of EUR 503 million, "Advancing the green transition" is the first of three priorities[1] under Ireland's National Recovery and Resilience Plan to access funding under the European Recovery and Resilience Facility (Department of the Taoiseach, 2021[4]). Around one-third of the EUR 10 billion investment envelope in Ireland's state budget for 2021, which at EUR 17 billion was the largest in the country's history, was allocated to sustainable transport and water infrastructure, energy efficiency and renewables, landfill remediation and peatland rehabilitation (DPER, 2020[5]). Preparing for a "greener, more sustainable economy in the future" was also one of the four pillars of Ireland's July Jobs Stimulus package of EUR 7.4 billion for 2020-21 (Department of the Taoiseach, 2020[6]). This may pave the way for concrete actions to transition from a linear to a circular economy.

Box 1.1. Definitions of the circular economy

There are many definitions of the circular economy: in fact, more than 100 have been counted. However, most definitions agree that it consists of designing waste and pollution out of the economy. Examples of definitions of the circular economy include:

- An economic system that replaces the end-of-life concept, with reducing, alternatively using, recycling and recovering materials in production/distribution and consumption processes. It operates at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim of accomplishing sustainable development, thus simultaneously creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations. It is enabled by novel business models and responsible consumers (Kirchherr, Reike and Hekkert, 2017[7]).
- The circular economy is one that has low environmental impacts and makes good use of natural resources through high resource efficiency and waste prevention, especially in the manufacturing sector, and minimal end-of-life disposal of materials (Ekins et al., 2019[8]).
- The circular economy is restorative and regenerative by design. Relying on system-wide innovation, it aims to redefine products and services to design waste out while minimising negative impacts. A circular economy is then an alternative to a traditional linear economy (make, use, dispose) (Ellen MacArthur Foundation, 2018[9]).
- The circular economy is where the value of products, materials and resources is maintained in the economy for as long as possible by returning them into the product cycle at the end of their use, thus minimising the generation of waste (EC, 2015[10]).

- There are three different layers of circularity, with increasingly broad coverage: i) closing resource loops, which is defined relative to a traditional economic system; ii) slowing resource loops and materials flows; and iii) narrowing resource loops, which implies a more efficient use of materials, natural resources and products within the linear system (OECD, 2019[11]).

Source: Extract from OECD (2020[12]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en, based on EC (2015[10]), *Circular Economy – Overview*, https://ec.europa.eu/eurostat/web/circular-economy (accessed 1 July 2020); Ellen MacArthur Foundation (2018[9]), *What Is a Circular Economy?*, www.ellenmacarthurfoundation.org/circular-economy/concept (accessed 1 July 2020); Ekins, P. et al. (2019[8]), "The circular economy: What, why, how and where", https://www.oecd.org/cfe/regionaldevelopment/Ekins-2019-Circular-Economy-What-Why-How-Where.pdf; McCarthy, A., R. Dellink and R. Bibas (2018[13]), *The Macroeconomics of the Circular Economy Transition: A Critical Review of Modelling Approaches*, http://dx.doi.org/10.1787/af983f9a-en; OECD (2019[11]), *Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences*, https://doi.org/10.1787/9789264307452-en; Kirchherr, J., D. Reike and M. Hekkert (2017[7]), "Conceptualizing the circular economy: An analysis of 114 definitions", https://doi.org/10.1016/j.resconrec.2017.09.005.

Some national governments in OECD countries, including Canada, Estonia, New Zealand and the Slovak Republic, have included measures related to the circular economy in their COVID-19 recovery strategies. Results from the OECD Green Recovery Database show that USD 677 billion have been allocated to environmentally positive recovery measures as of 30 September 2021 (Box 1.2). However, this accounts for just 21% of total COVID-19 recovery spending in OECD, European Union (EU) and key partner countries (OECD, 2021[14]). While mixed and negative measures account for "just" 10% of funding (EUR 319 million), the green recovery budget will be spent over a variable number of years, while support measures for fossil fuels amounted to USD 345 billion for 2020 alone in G20 countries and emerging economies, undermining green recovery efforts (OECD/IEA, 2021[15]). The findings of the OECD Green Recovery Database also highlight that governments spend roughly USD 500 billion annually on subsidies that harm biodiversity (OECD, 2019[16]). Resources for green measures have mainly been channelled towards energy and surface transport, while other crucial sectors for the green recovery such as industry, agriculture and waste management are poorly represented. In particular, water accounts for just 5% of funding for positive environmental measures, and waste and recycling for 1.5%.

Box 1.2. The circular economy in COVID-19 recovery package: Insights from the OECD Green Recovery Database

The Green Recovery Database tracks COVID-19 recovery measures with likely positive or negative environmental implications across 44 countries. It contains around 1 375 national-level measures that are environmentally relevant, covering a range of environmental impacts beyond energy and climate, including pollution (air, plastics), water, biodiversity and waste management. Some countries have included circular economy-related measures in their COVID-19 recovery packages. For instance:

- In Canada, the Surplus Food Purchase Program is being launched with an initial USD 50 million designed to help redistribute existing and unsold inventories to local food organisations serving vulnerable Canadians.
- Estonia is supporting separate waste collection solutions in municipalities. Since the COVID-19 outbreak, the maximum rate of support has been increased from 75% to 90%. The purpose of the grant is to increase the use of secondary raw materials and reduce the extraction of primary raw materials by increasing the capacity for separate collection of waste at the local government level.

- New Zealand is preventing food waste and supporting primary sector production by supplying food to New Zealanders in need. This initiative addresses acute immediate food production challenges from the drop in demand due to COVID-19 restrictions by maintaining and redirecting products to struggling communities. The initiative established a contingency fund to directly purchase products where significant food waste, animal welfare, biosecurity concerns or environmental concerns would otherwise result and will scale up the Fruit in Schools project to provide an additional 10 000 fruit and vegetable boxes per week for 10 weeks and enable other food products likely to be wasted to be redirected. It will also fund the development and trial of digital platforms to enable other novel solutions to connect food with consumers.
- The Slovak Republic is including circular economy transition measures as part of the draft reform programme for the period 2021-26. More specifically, these measures include reforming sorted collection of waste, making pay-as-you-throw mandatory, increasing the availability of reuse centres and removing illegal dumping sites.

Source: OECD (2021[14]), "Key findings from the update of the OECD Green Recovery Database", https://www.oecd.org/coronavirus/policy-responses/key-findings-from-the-update-of-the-oecd-green-recovery-database-55b8abba/ (accessed 19 December 2021); OECD (2021[17]), "The OECD Green Recovery Database: Examining the environmental implications of COVID-19 recovery policies", https://www.oecd.org/coronavirus/policy-responses/the-oecd-green-recovery-database-47ae0f0d/ (accessed 29 April 2021).

Drivers for the circular transition in Ireland

In 2020, Ireland was the European country with the second-lowest circular material use rate (2% against the EU27 average of 12.8%) (Eurostat, 2021[18]). Bridging this gap holds great promise for the Irish economy. The circular material use rate, also known as the circularity rate, measures the share of material resources coming from recycled and recovered materials:[2] the greater the use of secondary materials, the higher the circularity rate (Eurostat, 2021[19]). Beyond the limits of the indicators itself (i.e. it does not account for repair and reuse) and the characteristics of Ireland's domestic extraction (93% of which, in 2019, was biomass or non-metallic minerals, which are less suited to recycling than metallic minerals), it is clear that there is room for improvement in terms of material and resource efficiency in the Irish economy. It has been estimated that a 5% increase in resource efficiency would result in savings of EUR 2.3 billion annually for the Irish economy (EPA, 2014[20]). By making resource use more efficient, the circular economy alleviates environmental pressures linked to resource extraction and product manufacturing, namely greenhouse gas (GHG) emissions and air, water and soil pollution.

Global agendas such as the UN 2030 Agenda for Sustainable Development and the Paris Agreement, and supranational legal frameworks such as the European Commission (EC) Circular Economy Package are the main sources of inspiration and guidance for the transition towards the circular economy in Ireland. The government of Ireland views the EU Circular Economy Package (which includes the 2015 Circular Economy Action Plan and its 2020 update) and, in particular, its roadmap as high-level policy guidance to transition towards the circular economy (Box 1.3). Several new packages and initiatives at the EU level are also expected to promote the shift to a circular economy in Ireland. For example, the Fit for 55 package adopted by the EC in July 2021 will support the European Green Deal, of which one of the building blocks is the circular economy. With a view to reducing net GHG emissions by at least 55% by 2030, the Fit for 55 package strengthens 8 existing pieces of EU legislation and presents 5 new initiatives across a range of policy areas and economic sectors: climate, energy and fuels, transport, buildings, land use and forestry. For instance, the public sector will be required to renovate 3% of its buildings annually to drive renovation, create jobs and reduce energy use and costs, a target that circular economy principles applied to the built environment, for instance by applying circular economy criteria to green public procurement processes, can help to achieve.

Ireland committed to achieving net-zero carbon emissions by 2050 through its Climate Action and Low Carbon Development (Amendment) Act 2020, which is a significant driver for the circular economy (DECC, 2019[21]). Under the 2019 Climate Action Plan, the Whole of Government Circular Economy Strategy (hereafter "the Strategy"), to be renewed approximately every two years, recognises that a circular economy is essential to achieve climate targets, as renewable energy and energy efficiency can only address 55% of global GHG emissions (DECC, 2021[22]). The shift to a circular economy can mitigate emissions from the remaining 45% from agriculture, industry and land use (Ellen MacArthur Foundation, 2022[23]).

Box 1.3. European Commission measures for the circular economy

In December 2015, the EC adopted the *Closing the Loop–- An EU Action Plan for the Circular Economy* package to support the EU's transition to a circular economy. The package included the EU Action Plan for the Circular Economy, which set out 54 actions targeting the whole life cycle of products across 5 priority areas (plastics, food value chain, critical raw materials, construction and demolition, biomass and biobased products, and the review of fertilisers legislation), as well as four legislative proposals amending the Waste Framework Directive, the Landfill Directive, the Packaging Waste Directive and directives on end-of-life vehicles, batteries and accumulators and waste electrical and electronic equipment.

The EC set the following targets as part of the Circular Economy Package:

- 55% of municipal waste recycled by 2025, 60% by 2030 and 65% by 2035.
- Reduction of landfilling to 10% of municipal waste generated in 2035.
- Mandatory separate collection for hazardous waste (2022), organic waste (2023) and textiles (2025).

It also foresaw a reform of extended producer responsibility schemes, broadening their scope and governance and the setting of new objectives for preventing waste, especially marine and food waste.

In January 2018, the EC adopted several new measures for the circular economy, including the EU Strategy for Plastics in a Circular Economy, to transform the way plastic products are designed, produced, used and recycled. By 2030, all plastic packaging should be recyclable.

As part of the European Green Deal, one of the EC's six priorities for 2019-24, 2050 is the deadline to achieve net-zero GHG emissions in the EU. The new Circular Economy Action Plan, adopted in March 2020, is one of the building blocks of the Green Deal. It sets out 35 actions and initiatives aiming to:

- Make sustainable products the norm in the EU.
- Empower consumers and public buyers.
- Focus on the sectors that use most resources and where the potential for circularity is high.
- Ensure less waste.
- Make circularity work for people, regions and cities.
- Lead global efforts on the circular economy.

Under the new Circular Economy Action Plan and as of March 2022, the EC has several initiatives underway to improve the reparability and extend the useful life of products. These include a Sustainable Products Initiative, legislation on the right to repair and design requirements for electronics, among others. The Sustainable Products Initiative will revise the Ecodesign Directive and propose additional legislative measures to make products more durable, reusable, repairable, recyclable and energy-

efficient. The EC intends to propose new "right to repair" legislation in 2022 to strengthen consumer rights to repair products at fair prices, with the objective of extending the useful life of products.

The Global Alliance on Circular Economy and Resource Efficiency (GACERE) was launched in 2021 as part of the action plan to identify knowledge and governance gaps in progressing towards a global circular economy and to advance partnerships. Beyond EU member states, 15 other countries are members of the alliance, of which 8 are OECD member countries (Canada, Chile, Colombia, Japan, Korea, New Zealand, Norway and Switzerland).

Source: OECD (2020[12]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en; EC (2020[24]), *Circular Economy Action Plan: For a Cleaner and More Competitive Europe*, https://ec.europa.eu/environment/pdf/circular-economy/new_circular_economy_action_plan.pdf; EC (2018[25]), "New waste rules will make EU global front-runner in waste management and recycling", https://ec.europa.eu/info/news/new-waste-rules-will-make-eu-global-front-runner-waste-management-and-recycling-2018-apr-18_en (accessed 9 March 2022); European Parliament (2022[26]), *A European Green Deal - Legislative Train Schedule*, https://www.europarl.europa.eu/legislative-train/theme-a-european-green-deal (accessed 16 February 2022); European Parliament (2022[27]), "Right to repair", https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/698869/EPRS_BRI(2022)698869_EN.pdf.

Socio-economic factors

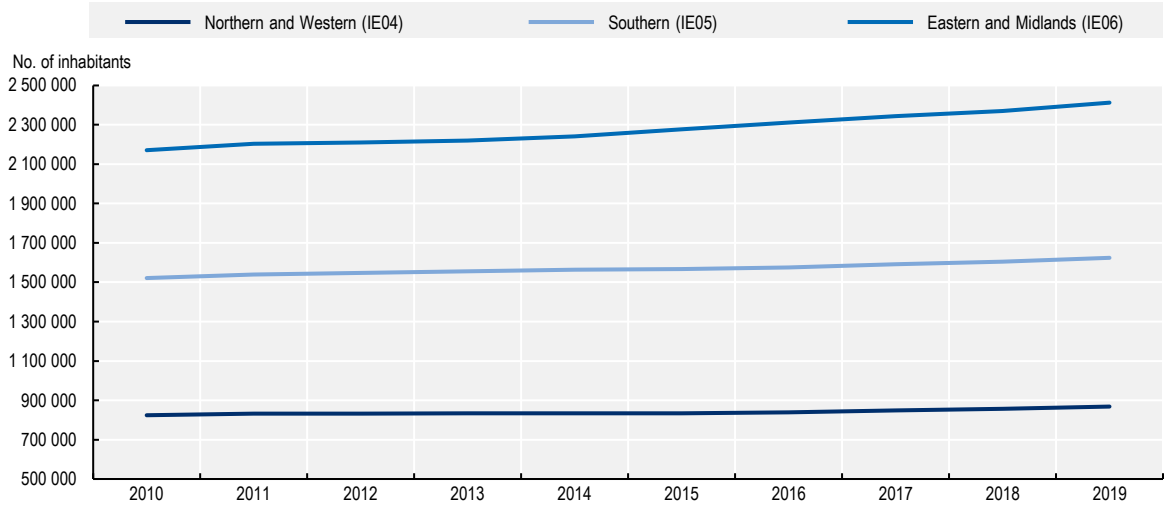
Demography

Ireland's growing population could drive increases in resource use, pollution and environmental pressure – issues that could be mitigated by a circular economy. The Irish population of 4.9 million has been growing at around 1% per year over the last 5 years, almost double the OECD average of 0.6% (OECD, 2020[28]). Much of this growth has been concentrated in the Eastern and Midland Region, seat of the capital city Dublin. Dublin[3] alone accounted for 40% of the population of Ireland (OECD.stat, 2021[29]). In the 5 years between 2014 and 2019, the growth rate of the population in the Eastern and Midland region (7.6%) was almost double the rate of population growth in Ireland's 2 other regions (4.1% and 3.9%) (Figure 1.1). This growth, projected to lead to an additional 1 million inhabitants by 2040, is expected to increase environmental pressure unless activities become more resource-efficient and environmentally sustainable. Ireland also has the highest share of the population living in a house in the EU (92%), including terraced houses, and the second-highest number of rooms per person (2.1), which partially explains Ireland's high level of GHG emissions per capita (1 263 kg) from heating (Eurostat, 2020[30]). According to Housing for All, Ireland's new housing plan, over 300 000 new homes will need to be built by 2030 to accommodate growing demand, and addressing vacancy and using the existing stock efficiently is established as one of four pathways towards a sustainable housing system by then (DHLGH, 2021[31]). This is an opportunity to embed circularity in Ireland's built environment, reusing material while improving resource efficiency.

Ireland is predominantly rural, with relatively dispersed settlement patterns, but compact urban growth could provide opportunities to improve resource efficiency. Around 60% of the population and 90% of the territory is predominantly rural,[4] the second-highest share among European OECD countries (OECD, 2020[32]). The remaining 40% of the Irish population lives in the Greater Dublin Area, where the population density is 21 times the national average (OECD, 2021[33]). However, Dublin residents have increasingly been moving out of the capital due to escalating housing prices (OECD, 2020[28]), a trend that may have accelerated with the COVID-19 pandemic. Compact urban development has been shown to have positive effects on productivity, energy efficiency and health, among other dimensions (OECD, 2019[34]). The OECD (2020[12]) highlights that compact cities can contribute to reducing GHG emissions by limiting the construction of new roads, sewers, water lines and other infrastructure. Achieving more compact growth of urban and rural settlements has been identified as the first national strategic outcome of Ireland's National Development Plan (NDP) 2018-2027.[5] As such, a circular built environment that makes the most

of the existing stock while limiting urban sprawl can improve the resource efficiency of buildings throughout their life cycle.

Figure 1.1. Population of Ireland by large region (Territorial Level 2), 2010-19



Note: Regions within the 38 OECD countries are classified on two territorial levels (territorial level 2 [TL2] and territorial level 3 [TL3]) reflecting the administrative organisation of countries (OECD, 2021[35]).
Source: OECD.stat (2021[29]), *OECD Statistics*, https://stats.oecd.org/ (accessed on 7 August 2021).

Ireland's relatively young population could facilitate the shift towards a circular economy, as younger people tend to be more inclined to change their consumption habits and more receptive to behavioural change incentives. A total of 21.4% of the population is aged under 15, higher than the OECD average of 17.8%, while 13.9% of the population is over 65, lower than the OECD average of 17.1% (OECD, 2020[28]). A total of 35% of 15-29 year-olds (and 43% of 15-19 year-olds) in Ireland consider climate change to be 1 of the top 3 challenges facing the country, compared to 29% and 28% of those aged 30 to 64, and 65 and older respectively (EIB, 2021[36]). Beyond age-related differences, in 2018, 86% of Ireland's adult population recognised the environment as a valuable asset for the country and over one-third considered climate change the most urgent environmental issue, followed by waste management and water quality (EPA, 2019[37]). However, a 2019 Eurobarometer survey suggested that significantly fewer Irish people were taking climate-related actions than on average in the EU (EC, 2019[38]). To address this issue, the 2021 Climate Action Plan recognises local community activity as central to delivering on its objectives and sees the National Dialogue on Climate Action[6] as a vehicle for providing financial support for local innovations, hosting climate conversations and an annual local climate action conference, as well as networking and capacity building (DECC, 2021[39]).

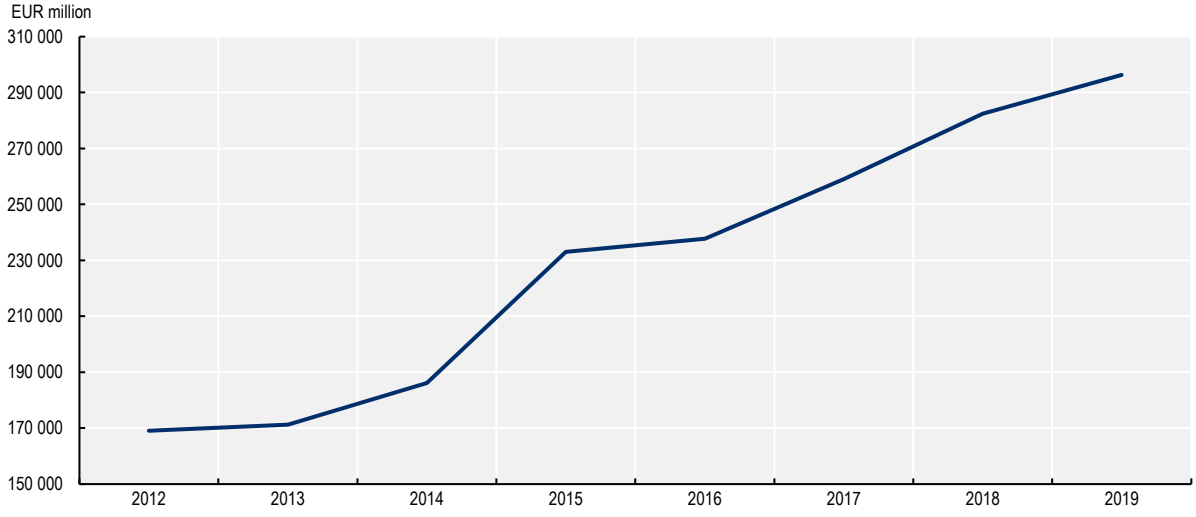
Economy

Before the COVID-19 pandemic, the Irish economy was booming, unemployment was low and consumption was growing, leading to increased environmental pressure (see the following sub-section on environmental data and trends). In 2018, driven by the relocation of multinational corporations to Ireland, GDP was growing 10.5% annually on average, almost 5 times the OECD average (2.3%) (OECD, 2020[28]).[7] GDP per capita in Ireland (USD 85 027) was almost double the OECD average (USD 45 244), bringing Ireland to the second place of the GDP per capita ranking among OECD countries (OECD, 2021[40]). Between 2010 and 2019, productivity (GDP per hour worked) in Ireland grew 42%, over 4 times the OECD average (9%), and the unemployment rate dropped from around 15% to 5%. Average real

wages exceeded the OECD average by 15%, driving private consumption, which showed sustained growth between 2014 and 2019. Following the COVID-19 pandemic, real GDP contracted by 3.2% in 2020 and private consumption in real terms dropped by 13.2%. However, growth surged by 15.2% in 2021 before slowing down to 5.7% in 2021. The Irish economy is expected to grow by 3.9% in 2023 (OECD, 2021[2]).

The close geographical and economic ties between Ireland and the United Kingdom (UK) mean that Ireland is on the frontline of the UK's departure from the EU in January 2021 (Brexit). The UK is Ireland's main export destination outside of the EU, accounting for 14% of Irish exports (up to 40% in the agri-food sector) and the Republic of Ireland and Northern Ireland (UK) share a land border (OECD, 2020[28]). The full extent of the impact of Brexit may not have been felt in Ireland due to the pandemic in the short term. However, challenges in sectors where the UK is a strong trading partner (e.g. in the agri-food, pharmaceuticals and retail sectors, among others) but also opportunities (e.g. from the relocation of financial services companies) should become clearer in the longer term (France Ireland Chamber of Commerce, 2021[41]). Government and civil society initiatives promoting cross-border co-operation are considering the circular economy as an area of collaboration. The Shared Island initiative set up by the Department of the Taoiseach, Ireland's prime minister, aims to enhance co-operation across Ireland and build consensus around a shared future (Government of Ireland, 2021[42]). As part of this initiative, the National Economic and Social Council was consulted to produce reports on shared island issues, one of which on climate and biodiversity mentions the circular economy (Moore, 2021[43]). Additionally, certain civil society initiatives promoting the circular economy also take an all-island approach, such as the Community Resources Network Ireland (see Chapter 2).

Figure 1.2. GDP at market prices, chain-linked volumes (2010), 2012-19



Source: OECD.stat (2021[44]), *Regional Demography*, https://stats.oecd.org/Index.aspx?DataSetCode=REGION_DEMOGR (accessed on 14 December 2021).

Ireland's economy is predominantly characterised by services and industry (59.7% and 39.3% respectively) (OECD, 2020[28]). Small- and medium-sized enterprises (SMEs) account for most employment in manufacturing and services but large companies dominate export-oriented sectors. Supply chain circular business models can be applied to enhance resource efficiency and create collaborations across businesses of different sizes. Virtually all of the approximately 250 000 active enterprises in Ireland in 2016 were SMEs of up to 249 employees (OECD, 2019[45]). SMEs account for as much as 56% of manufacturing employment and 74% of services employment in Ireland, while large firms are highly concentrated in capital-intensive and globalised activities, such as manufacturing of computers or

pharmaceuticals, international financial services and software development. Many large companies have adhered to circular economy principles through water and energy efficiency initiatives (see Chapter 2) but a more holistic approach reaching across all businesses in Ireland, including SMEs, is needed to create circular supply chains.

Agriculture accounts for just 1% of Irish GDP but for around one-third of Irish GHG emissions, 7% of total employment and 9.5% of merchandise exports in 2019 (OECD, 2021[33]). Three-quarters of Irish territory is farmland and 74% of Irish agricultural output is animal output, notably milk and cattle (31% and 27% respectively) (EC, 2021[46]). Agriculture accounts for 33% of Irish GHG emissions, of which almost 60% are due to animals, 30% from soils fertilised by manure, synthetic fertiliser or animal grazing on pasture and the remaining 10% from other sources, primarily animal manure management (Teagasc, 2020[47]). Building circularity into the agriculture and food sector by, for example, closing nutrient loops, preventing food loss on farms and reusing or recycling biowaste as input for other production processes (e.g. onsite biomethane production) could significantly contribute to reducing GHG emissions in Ireland as well as environmental pressures such as water pollution and abstraction. According to the Department of Business, Enterprise and Innovation (DBEI), the circular economy and the bioeconomy in the agri-food sector, of which 80% is based in rural Ireland, have significant potential for further job creation in rural areas (DBEI, 2019[48]).

Living standards, employment and skills

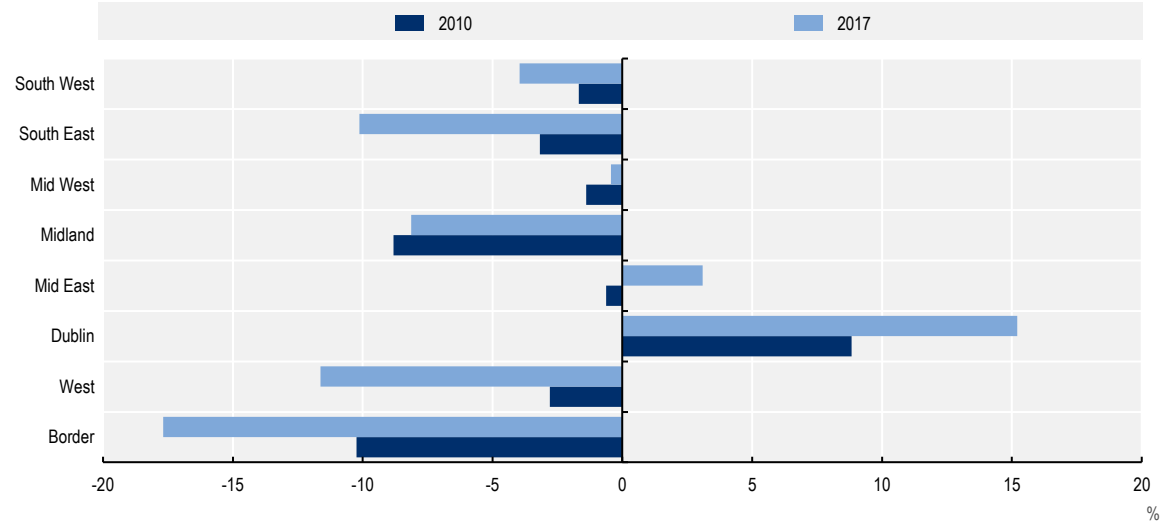
Regional disparities between Dublin and Cork, Ireland's two most populous cities, and the rest of the country have grown in the past decade. The shift towards high-added-value sectors (e.g. pharmaceutical products, chemicals and communication technology) and the arrival of large multinational companies over the past decade has affected the geographic distribution of economic activity in the country (OECD, 2021[33]). As a result, Dublin and Cork have experienced much faster growth than most other parts of Ireland since 2010 and, in most small regions, disposable income per person moved further away from the country average between 2010 and 2017 (Figure 1.3). However, Ireland's highly redistributive tax and transfer system has contained income inequality. Taxes and transfers bring Ireland's Gini coefficient down from 0.535 to 0.309, the latter being in line with the OECD average (OECD, 2020[28]). The P90/P10 ratio[8] of 10.3 is the 12th-lowest among the 31 OECD countries with data for 2017 and similar to countries such as Austria and France (OECD.stat, 2021[29]). Our Rural Future, a government plan to revitalise rural areas, notably by attracting remote workers from urban areas, could help bridge income and well-being gaps between urban and rural areas (DRCD, 2021[49]). Urban-rural differences in unemployment were relatively limited: unemployment reached 6.3% in rural regions in 2018, one point higher than the rate in predominantly urban regions (5.2%) (OECD.stat, 2021[29]).

A circular economy can be expected to have a positive net effect on job creation in Ireland, provided that workers acquire the skills required by the green transition. An economy favouring repair, maintenance, upgrading, remanufacturing, reuse, recycling of materials and product-life extension is more labour intensive than the mining and manufacturing activities of a linear economy (OECD, 2020[12]). At the EU level, between 2012 and 2018, the number of jobs related to the circular economy increased by 5% to reach around 4 million (EC, 2020[24]). Fostering circular economy activities (e.g. repair activities) could potentially deliver an additional 700 000 jobs by 2030, while other studies have estimated a European circular jobs dividend of 1.2 to 3 million generated by increased consumer spending power as a result of cheaper recycled materials becoming more widely available (EC, 2018[50]).

Ireland may face a skills shortage in key areas for the circular economy. Six groups of skills are relevant for circular jobs: basic, complex problem-solving, resource management, social, system and technical skills (Circle Economy, 2020[51]). Relative to the OECD average, Ireland has a shortage in all of the aforementioned skills (Figure 1.2). The country also has the highest share of underqualified employees (29.5%) among OECD countries (whose average is 19%) (OECD, 2020[28]), despite the higher level of

tertiary education attainment in Ireland (47%) compared to the OECD average (37%) (OECD.stat, 2021[29]). Irish strategies related to skills and employment are seeking to bridge these gaps. The 2019 Future Jobs Ireland strategy, which sets out an economic pathway for Ireland based on "embracing innovation and technological change, improving productivity, increasing labour force participation, enhancing skills and developing talent and transitioning to a low carbon economy", aims to double participation in lifelong learning by 2025. The circular economy as well as the low-carbon- and bioeconomy are at the core of the fifth and final pillar of the strategy (DETE, 2019[52]). However, while Ireland's Economic Recovery Plan (which supersedes the Future Jobs Ireland Strategy) includes a pillar relating to sustainability, it does not refer to the circular economy (Department of the Taoiseach, 2021[4]).

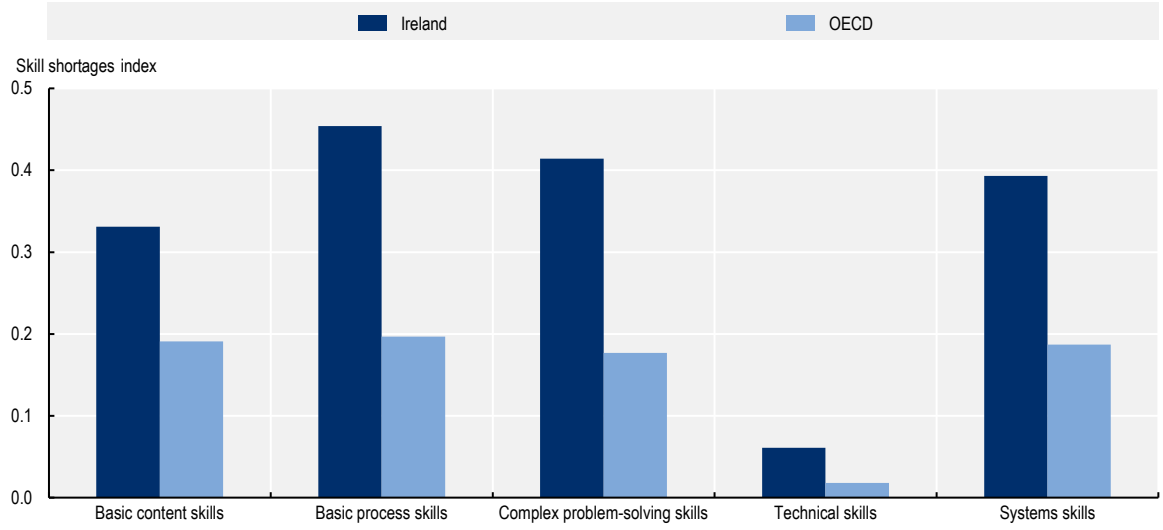
Figure 1.3. Disposable income per person by small region, percentage deviation from the national average



Source: OECD (2021[33]), *OECD Environmental Performance Reviews: Ireland 2021*, https://doi.org/10.1787/9ef10b4f-en.

Ireland has made significant progress in digitalisation over the last five years, ranking 6th in the 2020 European Digital Economy and Society Index[9] (EC, 2021[53]). The country ranks first for the integration of digital technology, with leading positions in the use of e-commerce by SMEs and the use of the Internet by individuals. The strong uptake of e-commerce among SMEs and the population suggests that small-scale circular businesses in Ireland could benefit from e-commerce to extend their customer base more than in other EU countries. However, progress is needed to improve digital connectivity, where Ireland ranks 23rd, and to boost human capital, as the Irish population at large lags in terms of digital skills. In this sense, recent government spending (around EUR 2.6 billion) to provide access to ultrafast broadband coverage to around 540 000 premises in rural Ireland, including free access to high-speed broadband for 300 community facilities, is a step in the right direction. New technologies and digitalisation are also enablers of the circular economy, as they can be used in a wide range of tools to achieve specific outcomes. Examples include material exchange platforms to increase product reuse, open-access calculation tools to highlight the benefits of increasing material efficiency in different economic sectors and awareness-raising platforms to build multi-stakeholder engagement for the circular economy (OECD, 2020[12]).

Figure 1.4. Skills shortages index, Ireland and OECD



Note: Positive values represent shortages, with the maximum and minimum values among OECD countries normalised to 1 and -1. 1=maximum OECD country. The OECD Skills for Jobs Database defines the abovementioned skills in the following way: Basic content skills: Developed capacities that facilitate learning or the more rapid acquisition of knowledge; Basic process skills: Developed capacities that facilitate learning or the more rapid acquisition of knowledge; Social skills: Developed capacities used to work with people to achieve goals; Complex problem-solving skills: Developed capacities used to solve novel, ill-defined problems in complex, real-world settings; Technical skills: Developed capacities used to design, set up, operate and correct malfunctions involving the application of machines or technological systems; Systems skills: Developed capacities used to understand, monitor and improve socio-technical systems; Resource management skills: Developed capacities used to allocate resources efficiently.
Source: OECD (2020[28]), *OECD Economic Surveys: Ireland 2020*, https://doi.org/10.1787/dec600f3-en.

Environmental data and trends

This section identifies data and trends in key environmentally related sectors, namely energy, water and waste, and their relevance to the transition to a circular economy in Ireland.

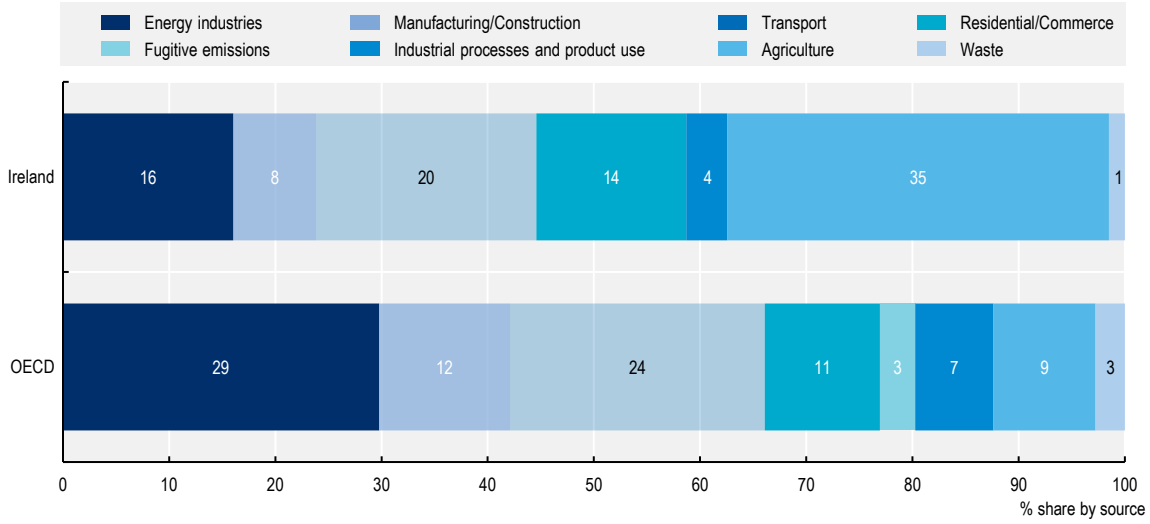
Climate, energy and emissions

Ireland committed to achieving net-zero carbon emissions by 2050 through the Climate Action and Low Carbon Development (Amendment) Act 2020 and significant efforts will be required to reduce GHG emissions by 30% compared to 2005 levels. The country is not currently meeting its emission reduction targets (DECC, 2019[21]). The latest report of the Climate Change Advisory Council (2020[54]) highlights that Ireland did not meet its EU 2020 target of reducing GHG emissions by 20% compared to 2005 levels, even accounting for the downward impact of COVID-19 on GHG emissions, achieving just a 7% reduction.

Agriculture, transport and the residential sector are the main drivers of GHG emissions in Ireland. The agriculture sector is the largest contributor, accounting for around one-third of Ireland's GHG emissions, a reflection of the country's particularly intensive livestock production (OECD, 2020[28]). Emissions from agriculture are set to increase through 2030 due to growing cattle numbers, increased fertiliser use and ongoing carbon losses from land (Climate Change Advisory Council, 2020[54]). National mitigation policies are particularly relevant in the Irish context, given that agricultural emissions are not priced and are not covered by the EU Emissions Trading Scheme (EU ETS). Against this backdrop, the Climate Action Plan sets out direct land use, land use change and forestry (LULUCF) abatement measures for the agriculture, forestry and land use sector, from improving energy efficiency on farms to diversifying land use, to meet the required level of emissions reductions by 2030. Transport and the residential sector are the second

and third most important drivers of GHG emissions, accounting for 20% and 15% of emissions respectively (OECD, 2021[33]) (Figure 1.5).

Figure 1.5. Greenhouse gas emissions in Ireland and OECD countries, 2018



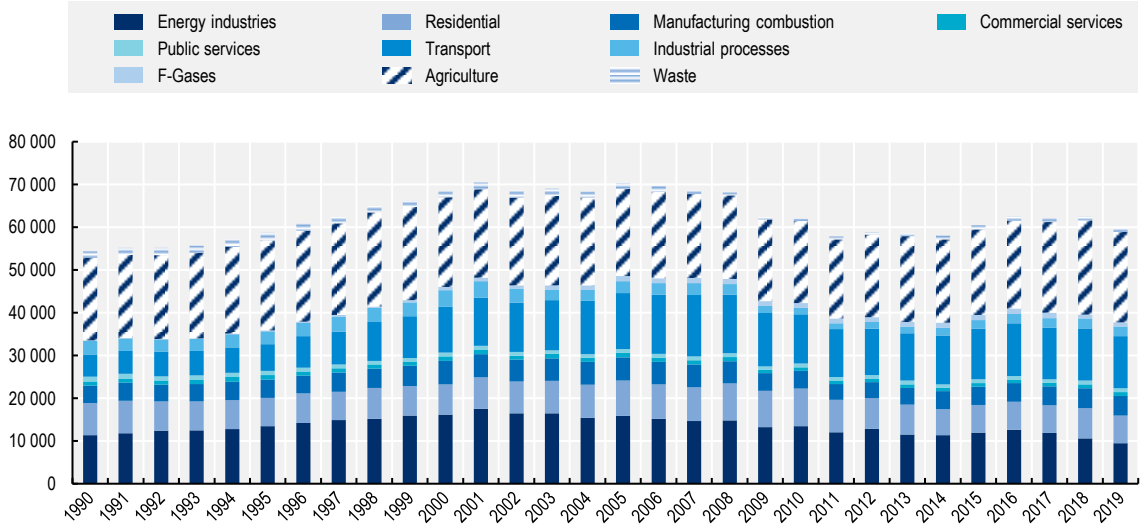
Source: OECD (2021[33]), *OECD Environmental Performance Reviews: Ireland 2021*, https://doi.org/10.1787/9ef10b4f-en.

While the contribution of most sectors to overall direct GHG emissions in Ireland (which amounted to 60 megatonnes of carbon dioxide, $MtCO_2$) has decreased between 1990 and 2019, the shares of agriculture and transport have respectively remained stable and significantly increased (EPA, 2020[55]) (Figure 1.6). The majority of economic sectors, including waste, energy and residential, have seen their contribution to GHG emissions decline, driven by a variety of factors such as improved waste management, the shift away from carbon-intensive energy sources to renewables, energy efficiency improvements and warmer winters. A circular economy in food and the built environment (see Chapter 2) can contribute to Ireland's low-carbon agenda by increasing the intensity of land use, while minimising environmental impacts through closing input loops.

Nevertheless, Ireland has made progress in reducing the CO_2 intensity of its GDP over the past 15 years, driven by declining energy intensity, rising renewable energy production and more recently, a strong increase in GDP. With an intensity of 0.18 kg of CO_2 equivalent per USD of GDP, Ireland was among the best-performing OECD countries in this regard in 2018 (OECD, 2022[56]). In the same year, 10.3% of the energy supply in Ireland was sourced renewably, in line with the OECD average (10.5%) (OECD, 2020[28]). However, Ireland will need to triple the share of renewable energy in its electricity mix by 2030 to achieve its target of 70% of electricity from renewables by then (DECC, 2019[21]). Furthermore, at 12.7 tonnes[10] of CO_2 per capita, Irish GHG emissions per capita are above the OECD average of 12 tonnes of CO_2 per capita (OECD, 2022[56]).

The recent spike in energy prices in Ireland, across Europe and globally may give further impetus to the circular economy and climate action. The average price of electricity to businesses increased by 14% between the second half of 2020 and the first half of 2021 to EUR 15.3 excluding VAT, above the EU-27 average price of EUR 13.36 (SEAI, 2022[57]). In October 2021, Electric Ireland announced a price increase of 9.3%, equating to an additional EUR 9 per month on the average electricity bill, due to "unprecedented" increases in wholesale energy costs (ESB, 2021[58]). Higher prices will make production and consumption more expensive and as such may drive higher resource efficiency in key sectors for the circular economy in Ireland such as the built environment and agriculture.

Figure 1.6. Greenhouse gas emissions in Ireland, tonnes (thousands), 1990-2019



Source: EPA (2020[55]), *Monitoring & Assessment: Climate Change: Air Emissions Publications*, https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/greenhouse-gas-emissions-final-2019.php (accessed on 15 July 2021).

Water resources, pollution and infrastructure

Ireland is rich in renewable water resources but high abstraction rates and climate change could significantly increase pressure on them. Ireland had 10 193 m^3 of renewable internal freshwater resources per capita in 2017, making it the 5th most water-rich country in Europe and the 11th-richest in the OECD (World Bank, 2021[59]). However, Ireland has one of the highest levels of freshwater abstraction per capita for public water supply in the OECD (2022[56]), partially due to a high level of water losses: around 40-43% of the public water supply is lost in leaks, although measures to limit leakage have been implemented (Irish Water, 2020[60]; 2021[61]). Additionally, Ireland is among the few OECD countries that do not charge households for water supply and wastewater services, as charges introduced in 2015 were scrapped a year later due to strong social opposition (OECD, 2021[33]). Households consuming water above a certain threshold will pay an excess use charge from 2022.

In the face of climate change, even Ireland has not been exempt from chronic drought. In July 2018, national water utility Irish Water introduced the first-ever National Water Conservation Order nationwide hosepipe ban following high temperatures and the absence of rainfall in June and July (EPA, 2020[62]). The hosepipe ban remained effective until September 2018. By increasing water treatment and reuse (e.g. in industrial processes), building circular water systems in Ireland could help to alleviate pressure on water quality and quantity, paving the way towards more climate resilience in water. Addressing the issue of leaks in the public water supply network, which new measures will seek to do (Box 1.4), is also essential to increase water efficiency.

Agriculture and urban wastewater are the main sources of water pollution in Ireland (EPA, 2020[63]). Ireland's National River Basin Management Plan 2018-2021 highlights that agriculture is the most significant source of pressure in terms of the number of water bodies at risk of not achieving good ecological status (53% of water bodies at risk), significantly more than urban wastewater (20%) (DHLGH, 2018[64]). Water quality is particularly affected by nitrates from agricultural soils in the south and southeast and phosphorous in the east and south of Ireland. Significant agricultural pressures include runoff of nutrients and sediment from agricultural land and farmyards and the contamination of surface waters with pesticides.

The current limitations in water treatment infrastructure also affect water quality. Despite progress on upgrading wastewater treatment plants, 56% of wastewater collected from urban areas in Ireland did not meet the quality requirements of the EU Urban Wastewater Treatment Directive in 2019 for which compliance was required by 2005 (OECD, 2021[33]). Ireland has one of the lowest shares in the OECD – less than two-thirds – of the population connected to at least a secondary water treatment system (OECD, 2022[56]). Increasing the coverage of wastewater treatment infrastructure is required to support better water quality and the achievement of the UN SDG 6 on clean water and sanitation for all by 2030. Irish Water has postponed the completion of infrastructure works allowing all areas to be connected to the public wastewater network with treatment facilities from 2022 to 2024 (EPA, 2020[65]). Recent changes in the water management system and the implementation of measures to reduce water abstraction and pollution could start to pave the way to success in this area (Box 1.4). Going forward, building new and updating existing water and sanitation infrastructure should follow circular economy principles to take advantage of the co-benefits of circular water systems, such as closing nutrient loops and becoming a net-positive source of energy, in addition to improving water quality.

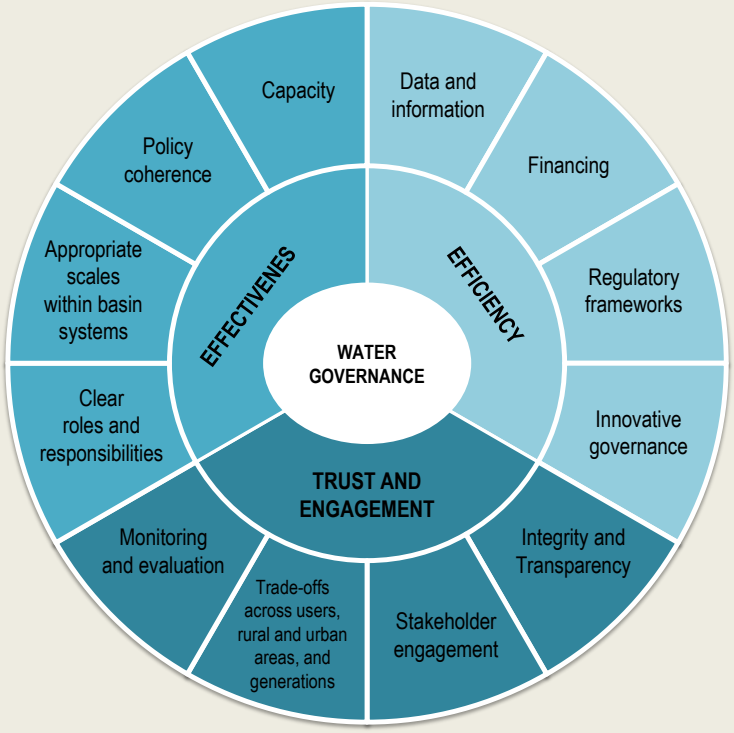
Box 1.4. Water governance reforms in Ireland: Towards implementation of the OECD Principles on Water Governance

Water governance in Ireland has improved over the past few years with the establishment of national water utility Irish Water and the adoption of a water services policy statement and funding framework. These reforms have supported progress towards the implementation of the OECD Principles on Water Governance (Figure 1.7), which provide the 12 must-dos for governments to design and implement effective, efficient and inclusive water policies.

The reform of the national water governance framework in Ireland focused on defining clear roles and responsibilities (Principle 1), policy coherence (Principle 3), capacity (Principle 4), data and information (Principle 5), and monitoring and evaluation (Principle 12). The Water Services Act established Irish Water as Ireland's national water utility in 2013. It took over from 31 local authorities as the entity responsible for the operation of all public water and wastewater services, aiming to overcome fragmentation and improve efficiency. The Water Services Policy Statement 2018-2025, published by the Department of Housing, Local Government and Heritage (DHLGH), aims to clarify the government's expectations for the delivery and development of water and wastewater services in Ireland. The newly created National Water Forum facilitates engagement with a wide range of actors at the national level.

The new institutional setting has allowed Ireland to boost investment in infrastructure and services, but investment levels in water and sanitation infrastructure by 2030 are still set to be insufficient. Irish Water invested approximately EUR 4.5 billion in public water and wastewater services between 2014 and 2020 and is expected to invest EUR 8.5 billion between 2018 and 2027 according to Ireland's National Development Plan (NDP), notably in programmes aiming to reduce leaks, ensure safe and sustainable water supply and increase wastewater treatment capacity. These investments should ensure compliance with EU water quality standards and improve water efficiency by reducing leakage. However, this amount is far from the EUR 20-25 billion to 2030 required to meet the water infrastructure needs of a growing population estimated by the OECD. Furthermore, Ireland is one of the only countries in the OECD that does not apply charges to household water and wastewater services, implying that the state essentially covers most water financing needs. Although an excess use charge will come into effect for households consuming water above a certain threshold from 2022, the charge will apply to less than 10% of metered domestic households.

Figure 1.7. The OECD Principles on Water Governance



Source: OECD (2015[66]), *OECD Principles on Water Governance*, https://www.oecd.org/cfe/regionaldevelopment/OECD-Principles-on-Water-Governance-en.pdf (accessed on 7 August 2021).

Over the coming years, the government aims to retain Irish Water as a national, publicly-owned, regulated water services utility, as outlined by the policy paper "Irish Water – Towards a national, publicly-owned, regulated, water services utility" published in February 2021 by the Minister for Housing, Local Government and Heritage. According to government expectations, this will involve: Irish Water separating from the Ervia Group in 2023; implementing an enabling framework ensuring adequate control of water services operations and human resources; and continued environmental and economic regulation carried out by the EPA and the Commission for the Regulation of Utilities respectively.

Source: OECD (2015[66]), *OECD Principles on Water Governance*, https://www.oecd.org/cfe/regionaldevelopment/OECD-Principles-on-Water-Governance-en.pdf (accessed on 7 August 2021); OECD (2018[67]), *Implementing the OECD Principles on Water Governance: Indicator Framework and Evolving Practices*, https://dx.doi.org/10.1787/9789264292659-en; Irish Water (2021[68]), *About Irish Water*, https://www.water.ie/about/about-irish-water/ (accessed on 7 August 2021); DPER (2019[69]), *Project Ireland 2040 Documents & Information*, https://www.gov.ie/en/collection/580a9d-project-2040-documents/ (accessed on 30 July 2021); DHLGH (2021[70]), "Minister O'Brien publishes Policy Paper on future of Irish Water", https://www.gov.ie/en/press-release/adf08-minister-obrien-publishes-policy-paper-on-future-of-irish-water/ (accessed on 7 August 2021).

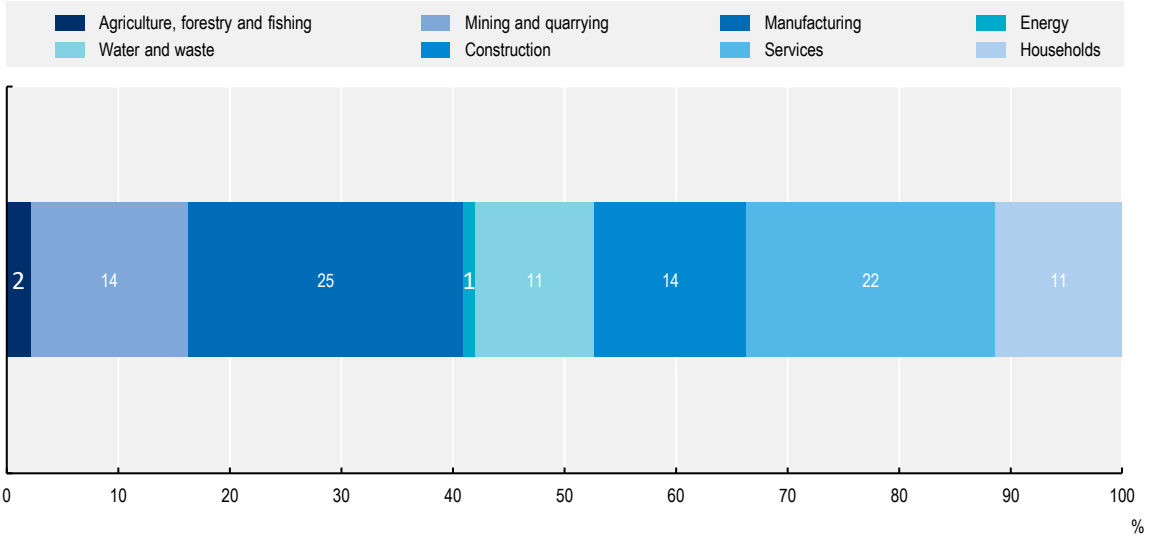
Material consumption and waste management

The Irish economy generates less waste than the EU average. Total waste (including major mineral waste) per capita in Ireland was less than half the EU average in 2018. In 2018, Ireland generated 2.9 tonnes of total waste per capita, significantly below the EU average of 5 tonnes (Eurostat, 2021[71]). This is partly explained by the relatively low contribution of mining and quarrying to total waste generated in Ireland

(14% of total waste generation) relative to the EU average (24%) (Figure 1.8). Municipal waste[11] accounted for around one-sixth of total waste generated in Ireland in 2018, amounting to 2.9 million tonnes or 604 kg per capita, above the OECD average of 538 kg per capita (OECD.stat, 2021[29]).[12] The manufacturing and services sectors were the main contributors to total waste in the country in 2018, accounting for 25% and 22% respectively (Figure 1.8). The manufacture of food, beverage and tobacco products (24%) is the second contributor to waste from the manufacturing sector.

Irish domestic material consumption (DMC) per capita currently amounts to 23 tonnes, the 12th-highest level in the OECD (OECD.stat, 2021[29]). It mostly consists of non-metallic materials and biomass, food and feed, reflecting the role of the construction and agriculture sectors in material resource use (OECD, 2021[33]). Given that construction materials tend to stay in the economy for long and that biomass can be consumed as food and animal feed, this strengthens the hypothesis that materials consumed in the Irish economy stay in use for long periods of time and may also explain Ireland's relatively low circularity rate to some extent.

Figure 1.8. Total waste generation by source in Ireland, 2018



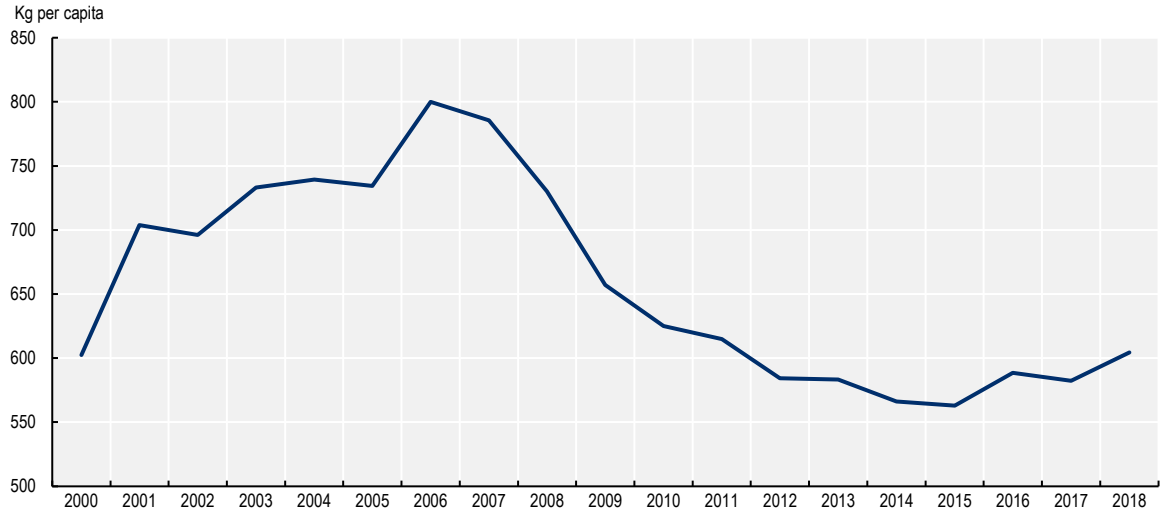
Source: Eurostat (2021[71]), *Waste Statistics*, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Waste_statistics (accessed 7 August 2021).

Municipal waste per capita has been growing in Ireland, mostly driven by non-household waste. After following a strong rising trend between 2000 and 2006 (+33% in 6 years), municipal waste per capita significantly decreased between 2007 and 2012 (-27%), before stabilising until 2017 and rising again since then (Figure 1.9). Municipal waste is relatively equally split between household (53%) and commercial waste (47%) (EPA, 2020[62]). However, household waste per capita has decreased significantly since 2008 (Figure 1.10) and the share of household waste in total municipal waste has remained stable since 2014 despite an 8% increase in absolute value, while other sources of municipal waste increased by 14.5% over the same period. This suggests that non-household waste has been the main driver behind the increase of municipal waste per capita observed since 2015.

Recycling of municipal waste significantly increased between 2001 and 2004, but recycling rates have plateaued since then and even declined since 2017. In 2018, Ireland recycled 38% of municipal waste, including biowaste (EPA, 2020[62]). Ireland recycles glass, wood and a small amount of plastic on its territory. However, the shift from landfilling (from 58% in 2010 to just 14% in 2018) favoured incineration with energy recovery, which grew significantly from 4% in 2010 to 43% in 2018, rather than recycling. The

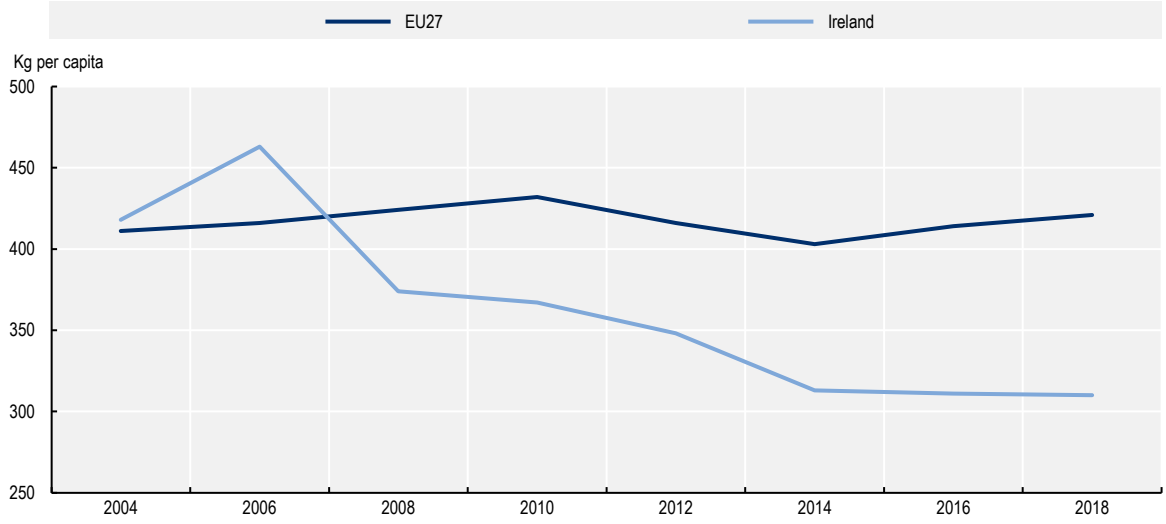
recycling rate of municipal waste plateaued at around 40% between 2010 and 2017, before decreasing to 38% in 2018 (Figure 1.11). Ireland met the EU Waste Framework Directive (WFD) 2020 recycling target (50%) for municipal waste, as a different calculation method based on household-derived paper, metal, plastic and glass is used for reporting on compliance with this target until 2020.[13] However, the higher EU recycling targets applying from 2025 will be challenging for Ireland to meet given the plateau in recycling rates and the new calculation methodology that is more comparable with the OECD-Eurostat indicator will make compliance with new targets even more challenging.

Figure 1.9. Municipal waste generated, 2000-18



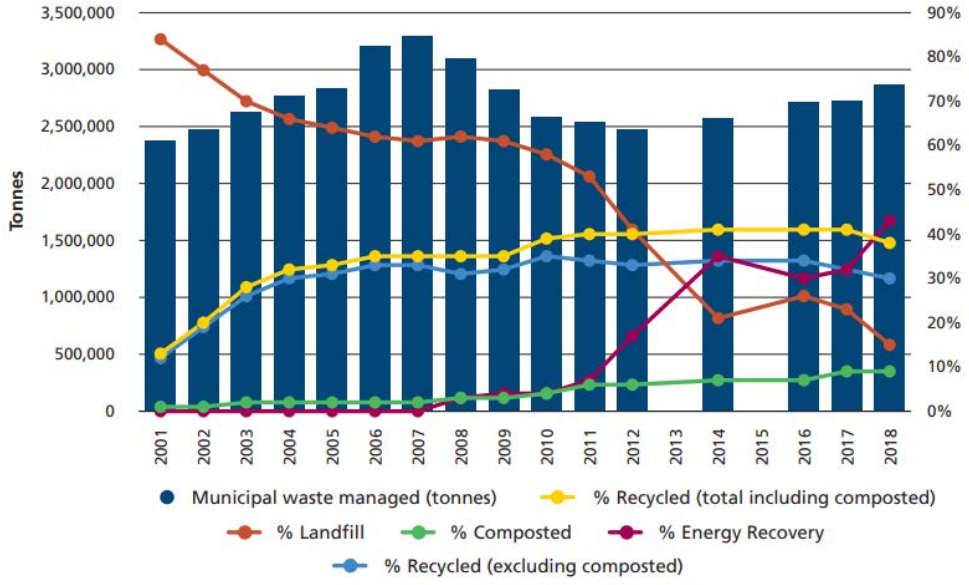
Source: OECD.stat (2021[72]), *Municipal Waste, Generation and Treatment*, https://stats.oecd.org/viewhtml.aspx?datasetcode=MUNW&lang=en# (accessed 22 July 2021).

Figure 1.10. Household waste generation, 2004-18



Source: Eurostat (2021[71]), *Waste Statistics*, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Waste_statistics (accessed on 7 August 2021)

Figure 1.11. Trends in municipal waste management, 2001-18

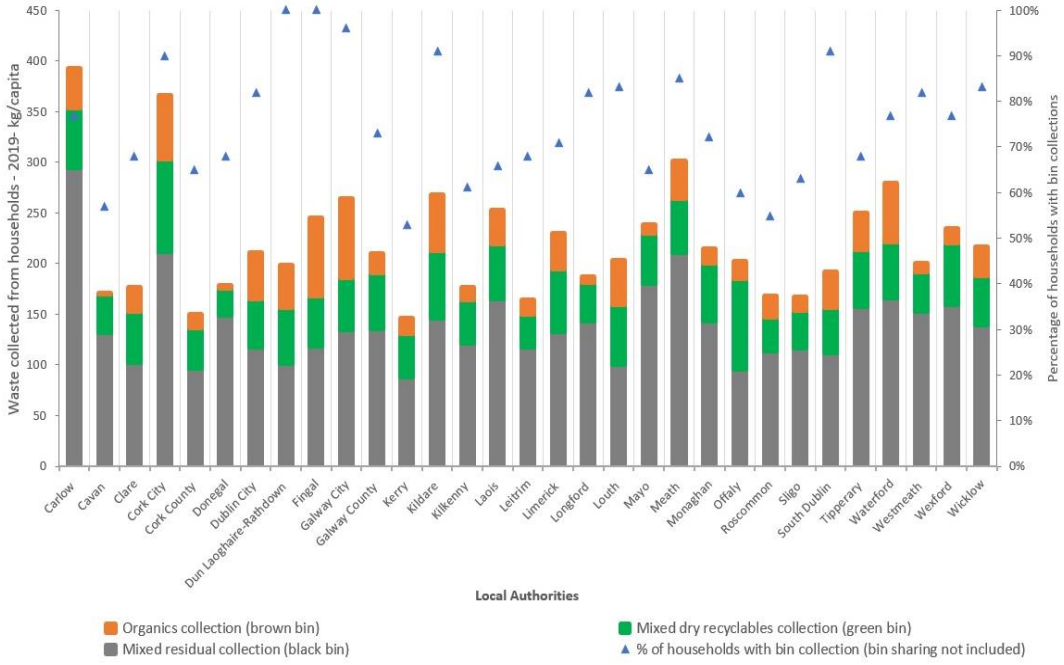


Source: EPA (2020[62]), *Ireland's Environment 2020: An Assessment*, https://www.epa.ie/publications/monitoring--assessment/assessment/state-of-the-environment/irelands-environment-2020---an-assessment.php (accessed on 16 July 2021).

There are strong disparities across local authorities in the levels of waste collected from households and per bin type (Figure 1.12). According to the EPA, these disparities are likely linked to differences in waste collection services and infrastructure, differences in the share of the population using authorised waste collection services and behavioural factors (EPA, 2021[73]). Cities (notably Dublin and Cork, the two most populous cities in the country) drive overall household waste in Ireland due to their high concentration of the population. Dublin and Cork alone account for 18% of all household waste and the top 5 local authorities[14] contribute 37%. As such, cities are ideal starting points to drive the circular economy in Ireland. The high waste levels and population density provide an opportunity for scaling up circular economy initiatives and extracting value from waste streams.

By preventing waste upstream, the circular economy in Ireland can contribute to reducing pressure on the country's waste treatment capacity and to limiting the export of waste. Ireland has insufficient waste treatment capacity to treat all of its waste on its own territory, making it reliant on export markets for the treatment of much of its residual and hazardous waste (EPA, 2020[62]). In 2018, over one-third of municipal waste was exported for recycling (73% of exported waste) and incineration with energy recovery (29%), and 73% of hazardous waste was sent to other European countries for disposal or recovery. The country's landfills and waste to energy facilities are operating at licensed capacity; it recycles glass, wood and small amounts of plastic on its territory but does not produce sufficient material to support a viable recycling industry for paper, steel or aluminium (DECC, 2020[74]). One-third of Irish municipal biowaste (89 642 tonnes) was treated in Northern Ireland in 2019, mostly due to more favourable gate fees (EPA, 2021[75]). Most construction and demolition waste generated in Ireland was treated domestically (96%) but only 9% was recycled, while the rest was recovered for backfilling. The circular economy can help to alleviate some of these pressures by preventing waste generation upstream (e.g. by embedding circular principles into planning and with effective end-of-waste criteria and by-product notification processes). However, additional treatment capacity will be needed to reduce exposure to export market shocks (e.g. closures at short notice) and to make the most of resources that can only be recycled or recovered as fuel.

Figure 1.12. Bin waste per capita collected from Irish households, by local authority



Source: EPA (2021[73]), *National Waste Statistics*, https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/ (accessed 7 August 2021).

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Notes

[1] Ireland's National Recovery and Resilience Plan has three priorities:

- Priority 1: Advancing the green transition (EUR 503 million).
- Priority 2: Accelerating and expanding digital reforms and transformation (EUR 295 million).
- Priority 3: Social and economic recovery and job creation (EUR 181 million).

[2] The circular material use rate, also known as the circularity rate, is defined as the ratio of the circular use of materials (U) to an indicator of the overall material use (M): $CMU = U/M$, with:

- $U = RCVR - IMP_w + EXP_w$, where $RCVR$ corresponds to recycling, IMP_w to the amount of imported waste bound for recycling, and EXP_w to the amount of exported waste bound for recycling.
- $M = DMC + U$, where DMC is Domestic Material Consumption. DMC is used as a proxy for raw material consumption, which more accurately reflects the overall material footprint of a country but is not available for all European countries yet (EC, 2018[77]).

As such, the circularity rate is lower than recycling rates (around 55 % in the EU), as some materials in the economy cannot be recycled, e.g. fossil fuels burned to produce energy or biomass consumed as food or fodder.

[3] In this case, reference is made to the Territorial Level 3 (TL3) region of Dublin. Regions within the 38 OECD countries are classified on two territorial levels reflecting the administrative organisation of countries (OECD, 2021[35]).

[4] A predominantly rural region is classified as predominantly rural remote (PRR) if at least 50% of the regional population needs more than 1 hour to reach a city (OECD, 2020[32]).

[5] As a result of the COVID-19 pandemic, the plan will be extended to 2030. The NDP is the government's investment strategy for public capital investment that supports the National Planning Framework, which extends to 2040. These two policy documents combine to form Project Ireland 2040.

[6] According to the Environmental Protection Agency (EPA), the vision of the National Dialogue on Climate Action is to "create a long-term process by which the national objective of climate neutrality and resilience by 2050 is communicated to all of society in a manner that creates awareness and understanding towards enabling climate actions across all of society and the economy" (EPA, 2021[78]). It is led by the Department for the Environment, Climate and Communications (DECC) with secretariat support provided by the EPA.

[7] It has been argued that GDP figures are distorted by the activity of multinational companies and relatively high consumer prices in Ireland compared to the rest of the Eurozone (Honohan, 2021[76]).

[8] The P90/P10 ratio compares the average income of the top and bottom deciles of the income distribution. A P90/P10 ratio of 10 indicates that the top decile of the income distribution has, on average, 10 times as much income of the lowest income decile.

[9] This index monitors EU member states' progress with respect to digital connectivity, human capital, use of Internet services, integration of digital technology and digital public services.

[10] The metric tonne, rather than the UK or US ton, is the unit of measure adopted throughout this report.

[11] The OECD defines municipal waste as the waste collected and treated by or for municipalities. It covers waste from households, including bulky waste, similar waste from commerce and trade, office buildings, institutions and small businesses, as well as yard and garden waste, street sweepings, the contents of litter containers and market cleansing waste if managed as household waste. It excludes waste from municipal sewage networks and treatment and from construction and demolition activities.

[12] It should be noted that definitions and measurement methods vary among countries. As such, the comparison of the Irish data with the OECD average should provide readers with a sense of scale rather an exact comparison.

[13] This calculation puts Ireland's municipal recycling rate at 51% in 2018.

[14] The top five local authorities in terms of household waste produced are Cork County, Dublin City, Dún Laoghaire-Rathdown, Fingal and South Dublin. Aside from Cork County, all of these local authorities are adjacent or very close to Dublin.

2 Towards the circular economy in Ireland

This chapter provides an overview of the circular economy landscape in Ireland. Key players in the Irish circular economy landscape include government departments and agencies, local authorities, social enterprises and industry implementing circular projects and initiatives at different territorial scales. Several sustainability and climate policies, programmes and initiatives are in place but tend to conceive the circular economy as a tool to reduce waste. This is reflected in the current Irish circular economy policy, which emerges from and sustains a strong focus on the waste sector. The Circular Economy Bill and the Whole of Government Circular Economy Strategy are crucial opportunities to broaden this vision and establish the circular economy as a climate-compatible economic development agenda for Ireland.

Circular economy policy in Ireland

The circular economy has risen on Ireland's political agenda in recent years, particularly as a result of European Commission (EC) action. Indeed, price-based instruments (e.g. extended producer responsibility [EPR] schemes on key waste streams) and levies (on plastic bags and waste going to landfill) have played an important role in shifting towards more circular waste practices. Over the past decade, Irish waste policy has gradually introduced elements conducive to circularity. These include:

- Stronger attention to the waste hierarchy through the 1998 *Waste Management: Changing Our Ways* policy statement.
- A focus on the reuse, recycling and recovery of end-of-life vehicles through the 2002 *End-of-Life Vehicles* sectoral report.
- A national programme to prevent waste (National Waste Prevention Programme, NWPP), established in 2004.
- A reduction in waste sent to landfills with the *Waste Management – Taking Stock and Moving Forward* report, considering thermal waste treatment.
- A stronger focus on resource efficiency through the 2012 waste management policy *A Resource Opportunity*.

Ireland is at a turning point for circular economy policy, which is born out of waste management policy. The Waste Action Plan for a Circular Economy (WAPCE), published in September 2020 (DECC, 2020[1]), paved the way for actions to: i) ensure that materials and products remain in use for longer by rewarding circularity and discouraging waste; ii) increase producer responsibility for products and packaging; iii) support sustainable business models; iv) promote a multi-sectoral approach with the voluntary sector, R&D, producers, manufacturers, regulatory bodies and civil society; and v) clarify and strengthen institutional arrangements for the waste sector, including through a heightened role for local authorities. The forthcoming National Waste Management Plan for a Circular Economy 2022-2028 is expected to embed circular economy principles to prevent waste, reduce the consumption of single-use items, incentivise reuse and repair initiatives, maximise recycling and use waste as an energy source to replace fossil fuels. It should also officialise the existing homogeneity between regional waste management plans, which already have very similar targets to one another, by effectively merging these regional plans into a single national one with common objectives and targets (for more information, see sub-section on the role of subnational government in the circular economy below).

Following the publication of the WAPCE, a Circular Economy Unit was established within the Department of the Environment, Climate and Communications (DECC) to lead circular economy policy in Ireland, notably by developing a Whole of Government Circular Economy Strategy (hereafter "the Strategy") (DECC, 2021[2]) published in December 2021. The strategy is expected to be renewed every 18-24 months. Following the Strategy's publication, the Circular Economy Unit is setting up an inter-departmental Circular Economy Working Group with relevant ministers, government departments, state agencies and local governments. The strategy aims to:

- Provide a national policy framework for Ireland's transition to a circular economy and promote public sector leadership in adopting circular policies and practices.
- Support and implement measures that bring Ireland's circularity rate above the European Union (EU) average by 2030.
- Raise awareness about the circular economy and its benefits for citizens and businesses.
- Support and promote increased investment in the circular economy to deliver sustainable and regionally balanced economic growth and employment.
- Identify and address the economic, regulatory and social barriers to Ireland's circular transition.

The Environmental Protection Agency's (EPA) Circular Economy Programme, also published in December 2021, replaced the NWPP. The programme is intended as a vertical co-ordination mechanism to support the Circular Economy Unit in ensuring the coherence and alignment of activities across levels of government (EPA, 2021[3]). It also aims to support the transition to a circular economy through innovation grants, sponsorships and seed funding, improve national knowledge and provide an evidence base to support circular economy development in Ireland. A Circular Economy Advisory Committee will gather national stakeholders to identify how the programme can best drive the national transition to a circular economy. A mid-term review of the programme will evaluate its effectiveness, alignment with national policy and value added.

Finally, a new Circular Economy Bill is expected by June 2022. The bill should provide the legislative framework for the circular economy in Ireland, ensuing political continuity and accountability for circular economy policy by giving the Strategy statutory status. It should also transpose EU circular economy legislation into national law and effect several WAPCE measures such as the "latte levy" on single-use cups. The bill should also clarify links between the strategy and other policy frameworks: for instance, the National Planning Framework is expected to feed into subsequent iterations of the Strategy. The structure of the bill was approved by the Cabinet on 16 June 2021, after which the Joint Committee on Environment and Climate Action published the *Report on the Pre-Legislative Scrutiny of the Circular Economy Bill 2021* (2021[4]).

The circular economy is a component of broader government policy frameworks in Ireland. Notably, the development of a Whole of Government Circular Economy Strategy is an action of the Programme for Government, the Climate Action Plan and the WAPCE (Department of the Taoiseach, 2020[5]; DECC, 2019[6]). The circular economy is also mentioned in several other sectoral policy documents in Ireland. In fact, several government plans and strategies have recognised the circular economy's role in managing resources efficiently and designing out pollution (Table 2.1). Additionally, the circular economy is often linked to the bioeconomy, which was identified as a strategic priority by Ireland's 31st government (2017-2020) in 2018 (Government of Ireland, 2018[7]). However, the term "circular economy" is often used as a synonym for waste management and narrowly considered as a tool to reduce waste rather than a new economic paradigm with environmental and social benefits.

Table 2.1. The circular economy in key policy frameworks of Ireland

Document	Ownership	Document description	Link to the circular economy
Programme for Government: Our Shared Future (2020)	Department of the Taoiseach (Irish Prime Minister)	The Programme for Government is the current coalition government's agreed programme of measures. It is structured around 12 missions, including better quality of life, a Green New Deal and balanced regional development.	Waste and domestic implementation of the EU Circular Economy Action Plan are one of the components of the "Energy" pillar under the Green New Deal mission. The WAPCE and some of its key measures, such as strengthening extended producer responsibility (EPR) schemes, are outlined as actions in the programme.
Project Ireland 2040 (2021)	DPER	Project Ireland 2040 is the combination of the government's EUR 116 billion National Development Plan (NDP) 2021-2030, which is underpinned by a 20-year National Planning Framework (NPF). The NPF sets the vision and strategy for Ireland's development to 2040, and the NDP provides the enabling investment to implement it. The policies outlined in the NPF are structured around National Policy Objectives (NPOs) resulting from extensive analysis and stakeholder consultation. On the other hand, the NDP is structured around ten overarching National Strategic Outcomes	• Under the NPF, the circular economy relates to 2 of approximately 100 NPOs on the circular economy and bioeconomy, and waste. NPO 53 aims to support the circular and bioeconomy, in particular through "greater efficiency in land management, greater use of renewable resources and by reducing the rate of land use change from urban sprawl and new development". NPO 56 on waste aims to "sustainably manage waste generation, invest in different types of waste treatment and support circular economy principles, prioritising prevention, reuse, recycling and recovery, to support a healthy environment, economy and

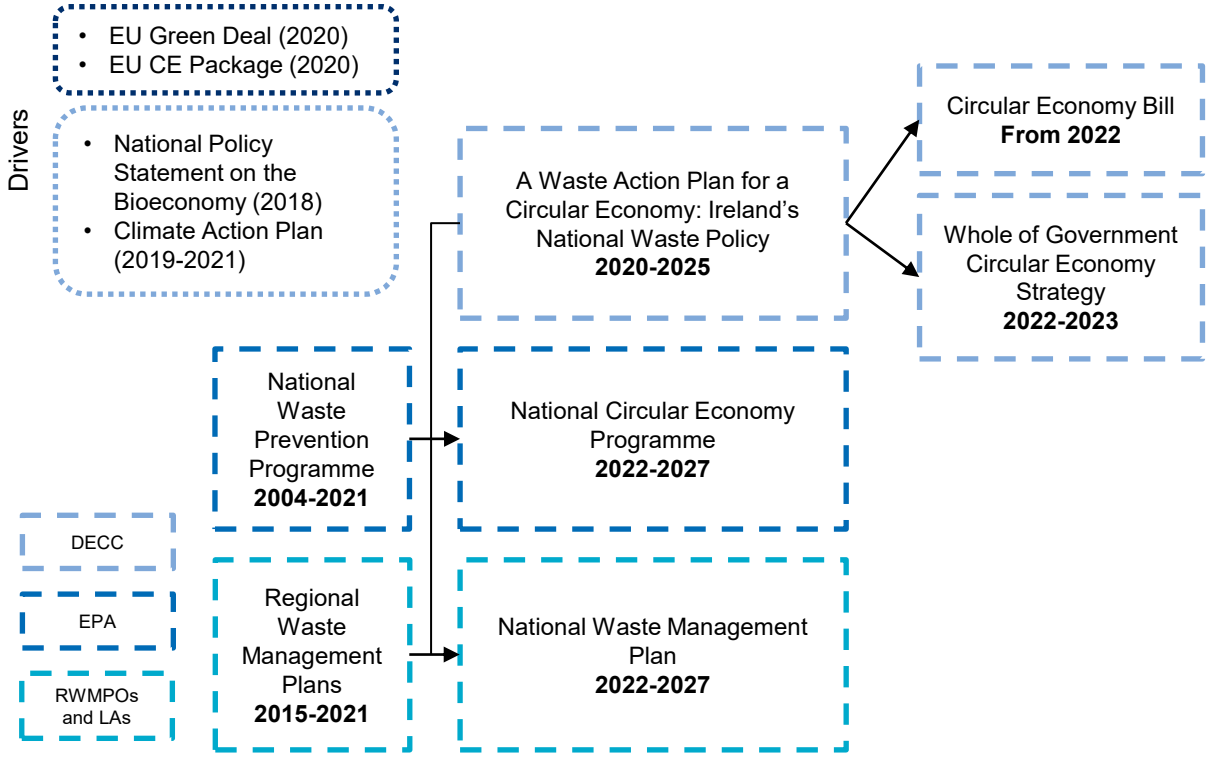
Document	Ownership	Document description	Link to the circular economy
		(NSOs).	society". • Under NSO 9, which relates to the sustainable management of natural resources, the NDP highlights that the DECC will invest significantly in the transition to a circular economy and sustainable resource management. This includes the measures outlined by the WAPCE and the draft Circular Economy Strategy.
Climate Action Plan (CAP) (2019; 2021)	Overseen by the Department of the Taoiseach and implemented by the DECC	Ireland's 2019 CAP sets out Ireland's roadmap for climate action to 2030. The 2021 Interim Climate Actions formally replace the Annex of Actions published as part of the 2019 CAP and follows the Climate Act 2021, which commits Ireland to achieve a legally binding target of net-zero greenhouse gas (GHG) emissions by 2050 and a reduction of 51% by 2030.	The CAP underlines the need to increase sustainability in the waste sector and sees the circular economy as a component of the national strategy to reduce GHG emissions. It also recognises the contribution of a circular bioeconomy to reducing GHG emissions. In particular, the plan states that keeping the value of bio-based products, materials and resources in the economy for as long as possible can significantly contribute to a sustainable, low-carbon, resource-efficient and competitive economy. Key WAPCE measures such as the development of the Circular Economy Strategy are also included as actions under the CAP.
National Policy Statement on the Bioeconomy (2018)	Overseen by the Department of the Taoiseach and co-implemented by the DECC and DAFM	The National Policy Statement on the Bioeconomy sets out a vision for the bioeconomy in Ireland and common principles, strategic objectives and an implementation framework to deliver on said vision.	According to the National Policy Statement, "the bioeconomy has a close relationship with the circular economy and represents an area where Ireland has some crucial advantages. The bioeconomy should promote circularity through solutions and innovations that reuse and recycle materials, maximising resource efficiency through the use of unavoidable wastes and environmental sustainability".
Future Jobs Ireland (2019)	Department of Enterprise, Trade and Employment (DETE)	Future Jobs Ireland establishes 26 ambitions under 5 pillars with a view to building the resilience of the Irish economy and taking full advantage of future economic opportunities. The deliverables outlined for 2019 were intended to be built on in subsequent annual editions, but no further iterations of the document have been published as of December 2021.	One of the strategy's three ambitions under its fifth and final pillar on transitioning to a low carbon economy is to make Ireland a global leader in the circular and bioeconomy. However, the 2019 deliverables are all limited to the bioeconomy and do not mention the circular economy.
Our Rural Future: Rural Development Policy 2021-2025 (2021)	Department of Rural and Community Development (DRCD)	Our Rural Future is the government's blueprint for the development of rural Ireland post-COVID-19. It provides the framework to achieve the vision of transforming the quality of life and opportunity for the rural population. This includes deliverables related to remote working, revitalising towns and villages, and agriculture, the marine and forestry.	The circular economy is considered as a sub-sector of the green economy, along with clean mobility, green and blue infrastructure, and sustainable agriculture, among others. The policy sees the development of the green economy as one of the measures needed to transition to a climate-neutral economy, which represents one of the policy's nine deliverables.

Note: The Taoiseach is the Irish Prime Minister and head of Government; DECC stands for the Department for of the Environment, Climate and Communications; DAFM stands for the Department of Agriculture, Food and the Marine.
Source: Author's own elaboration based on (Department of the Taoiseach, 2020[5]; DPER, 2019[8]; DECC, 2019[6]; DECC, 2021[9]; DETE, 2019[10]; DRCD, 2021[11]; Government of Ireland, 2018[7]).

Institutional map of the circular economy in Ireland

Several institutions across levels of government are involved in circular economy policy making in Ireland, particularly the DECC, the EPA, regional waste management planning offices (RWMPOs) and local authorities (Figure 2.1).

Figure 2.1. Circular economy policy in Ireland



Note: CE: Circular economy; LAs: Local authorities.

At the national level, the DECC[1] is responsible for setting out the overarching policy framework for the circular economy. The Minister of the Environment, Climate and Communications leads the strategy with the Circular Economy Unit within the DECC. The unit facilitates intra-departmental and inter-departmental co-ordination with the Circular Economy Working Group, which is set to involve relevant ministers, government departments, state agencies and local governments. Building on the Waste Advisory Group that informed the WAPCE, the Circular Economy Advisory Group aims to support the Strategy's implementation and provide input for subsequent iterations, planned every 18-24 months. Exceptionally, the second iteration of the Strategy should be published one year after the publication of the first version, in December 2022. All 36 members of the Waste Advisory Group[2] have been invited to participate and the DECC will invite new stakeholders with a view to providing balanced representation (DECC, 2021[2]).

The EPA is an independent public body operating under the DECC. It regulates most waste treatment facilities and other sources of environmental pressure, implements compliance systems, provides knowledge (environmental data, assessments and evidence) to inform decision-making and works with stakeholders to advocate for a sustainable society and economy, notably through the Circular Economy Programme, previously the NWPP.

Other national agencies are also starting to include circular economy principles in their strategies and operations. For example, Transport Infrastructure Ireland (TII) is developing a Circular Economy Plan to embed circular principles in its operations. As the state agency responsible for road and public transport infrastructure in Ireland, TII is involved in the consumption and transport of bulk construction materials in Ireland, both through its own procurement and as the author of standards and specifications used in the Irish construction industry. TII has taken a systems-mapping approach to identify actions, including updates to design and materials standards, industry and supply chain engagement and standard circular economy plans for TII projects and programmes. It identifies actions under five key themes: asset management, procurement, life cycle assessment, stakeholder engagement and data and materials management. Three circular pilot projects are already underway.

At the subnational level, regional waste management planning offices (RWMPOs) and local authorities are involved in circular economy policy implementation. The RWMPOs for the three waste management regions (Connacht-Ulster, Eastern-Midlands and Southern) are responsible for developing and implementing regional waste management plans and promoting waste prevention, reuse, resource efficiency and recycling. Local authorities set up in-house circular economy initiatives or support those led by businesses or communities, ensure compliance with waste management regulations and regulate smaller waste treatment facilities (see below for further details).

Several co-ordination mechanisms are in place for waste management: between the DECC and the EPA (e.g. a Service Level Agreement establishing key performance indicators for the EPA, and quarterly planning and monitoring meetings on the NWPP); between the DECC and local authorities (e.g. National Coordination Committee and Communications Working Group); and between the DECC, the EPA and local authorities (e.g. quarterly waste prevention meetings). Additionally, the Local Authority Prevention Network (now the Circular Economy Network under the Circular Economy Programme) is a co-operation programme between the EPA and local authorities in Ireland that facilitates horizontal and vertical co-ordination to share best practice, identify opportunities for scaling up circular economy initiatives and build capacity.

The role of subnational government in the circular economy

Ireland is one of the most centralised countries of the EU and OECD. The national government administers most of the main public services including policing, education, water services[3] and health (EC, 2018[12]). However, the Local Government Reform Act 2014 granted local authorities new responsibilities and replaced the eight regional authorities with three non-elected regional assemblies composed of county councillors and city councils within the region. Although the assemblies have some administrative support, they are not regional administrations as such.

Box 2.1. Subnational governance, reform and finance in Ireland

Subnational governance and reform

Ireland is a highly centralised unitary country where local authorities are the only level of subnational government. Local authorities have limited responsibilities relative to other OECD countries and subnational spending and revenue are low in Ireland, as in other OECD countries with low levels of decentralisation (e.g. New Zealand and Portugal).

The Local Government Reform Act 2014 merged municipalities and recentralised certain functions while expanding other local authority responsibilities. The reform sought to update and rationalise the country's territorial structure, increase democratic governance and the spending efficiency of local governments. It merged 114 local councils into 31 local authorities, replaced 8 regional authorities by

3 regional assemblies (not elected by universal suffrage), reassigned water services to Irish Water, recentralised certain functions, and allocated new responsibilities to local authorities for local and community development, business support and economic development. It also created a nationally representative system of sub-county governance, whereby most local authorities (aside from Cork City, Dublin City, Dun Laoghaire-Rathdown, Fingal, Galway City and South Dublin) are divided into 95 municipal districts with councillors representing the municipal district as well as the local authority.

The 2014 reform significantly reduced municipal fragmentation. Ireland is one of the OECD countries with the largest municipalities, alongside Japan, Korea, New Zealand and the United Kingdom (UK). Shared services programmes between municipalities are common in Ireland, notably for waste management.

Subnational government finance

Local government reforms, recentralisation and the 2008 economic crisis significantly reduced subnational spending and revenues. Better local government reforms from 1995, including the Local Government Reform Act 2014, led to a significant decrease in subnational government expenditure. Expressed as a share of total government expenditure, it dropped by almost 25% in Ireland between 1995 and 2016, among the sharpest decreases among OECD countries.

Over the same period, revenues from national government grants and subsidies shrunk by almost 25%. This was compensated to some extent by local tax revenues, which increased by almost 15%. These revenues come from property taxes on commercial properties and, since 2013, a new property tax on residential properties. The elected members of each local authority decide the Annual Rate on Valuation applied to the valuation of each property in their annual budget. Other local government revenues (24%) include service fees and charges, such as commercial water charges, housing rents, waste charges, parking charges, planning application fees and others.

Transfers from the central government include specific (earmarked) grants and a general grant, the Local Government Fund (LGF). Established in 1999, the LGF provides local councils with general funding considering the expenditures and revenues of each local authority. Specific grants finance sectoral public programmes (e.g. housing and roads).

Source: OECD (2017[13]), *Multi-level Governance Reforms: Overview of OECD Country Experiences*, https://doi.org/10.1787/9789264272866-en; OECD (2018[14]), *Ireland Country Profile*, https://www.oecd.org/regional/regional-policy/profile-Ireland.pdf; OECD (2019[15]), *Making Decentralisation Work: A Handbook for Policy-Makers*, https://doi.org/10.1787/g2g9faa7-en; LGMA (2022[16]), *Local Government*, https://www.lgma.ie/en/irish-local-government/ (accessed 1 February 2022).

Regional assemblies

Regional assemblies co-ordinate and promote strategic planning and sustainable development at the local level, promote the effectiveness of local government and public services, and manage EU funding for regional development (OECD, 2021[17]). They notably have a statutory responsibility for the development of a 12- to 20-year Regional Spatial and Economic Strategy (RSES), a planning and economic framework that considers future development at the regional level. The RSES serves as a link between national and local planning, as Local Economic and Community Plans are required to align with the RSES, which translates and sets out Project Ireland 2040 at the regional level. Regional assemblies work with local authorities to "future-proof" these plans in view of the evolving EU framework, which regional assemblies are involved in. RSES are strongly aligned with the EU regional development and cohesion policy, which identifies the circular economy as a means of reaching one of its five main objectives on achieving a greener, lower-carbon Europe. As such, the RSES recognises the circular economy as a means of achieving value and job creation, climate mitigation and resilience, beyond waste reduction and recycling.

For instance, the Eastern and Midland Regional Assembly (2019[18]) identifies the low-carbon and circular economy as a sector of particular regional importance given its labour intensity and potential for job creation. Regional assemblies are also involved in a broad range of policy areas related to planning at the regional level: for instance, they sit on the boards of Climate Action Regional Offices and of the Regional Enterprise Plans, which are developed by regional stakeholders with a view to enterprise growth and job creation in the eight NUTS 3 regions[4] in the country.

Regional waste management planning offices

Ireland has three waste management regions created solely for the purpose of waste management planning: the Southern, Eastern-Midlands and Connacht-Ulster Regions. These regions are different geographically from the regional assemblies. The three Regional Waste Management Plans introduced in 2015 are implemented under the supervision of local offices: the Southern Region Waste Management Office (SRWMO), the Eastern-Midlands Regional Waste Office (EMRWO) and the Connacht-Ulster Regional Waste Management Office (CURWMO). They are notably responsible for co-ordinating the implementation of the statutory regional Waste Management Plans with local authorities and developing the policy to be implemented by local authorities in collaboration with stakeholders. They are also in charge of: reporting annually on the performance under each plan's policy headings; preparing applications for grant assistance for projects at the regional level; providing training to support the implementation of the plan across the region; and raising community and local authority awareness of waste management issues. Box 2.2 presents reuse, repair and recycling initiatives promoted by the waste management regions.

The RWMPOs co-operate with one another to deliver national projects and initiatives, while also carrying out regional projects. Each RWMPO has a co-ordinator, a prevention officer, a resource efficiency officer and a technical officer. In each case, the officers engage across RWMPOs as formal groups to deliver prevention, resource efficiency and technical projects, with a co-ordinator leading and guiding each group and liaising with the other co-ordinators as required.

The high similarity of the three regional Waste Management Plans led to the decision to replace them, at the end of their validity period (end of 2021), with a National Waste Management Plan for a Circular Economy 2022-2028. All three Regional Waste Management Plans for 2015-21 include the following common targets: i) achieving a 1% reduction per annum in the quantity of household waste generated per capita; ii) ending the direct disposal of unprocessed municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices; and iii) achieving a recycling rate of 50% of managed municipal waste by 2020. Although national, the new waste management plan will continue to be implemented under the co-ordination of the RWMPOs. The plan aims to translate relevant WAPCE measures into action at the local level and is expected to be based on circular economy principles, considering waste as a valuable resource, ensuring greater resource efficiency and avoiding material losses. A pre-draft public consultation for the new NWMP was opened in March 2021 and will be followed by a post-draft consultation planned in May 2022.

Box 2.2. Circular economy initiatives in the waste management regions of Ireland

The waste management regions promote the reuse, repair and recycling of products and materials. They provide training for citizens to repair furniture and bicycles, workshops for local authorities to increase sustainability in waste management, and technical expertise for the implementation of regional waste management plans. Many different initiatives have been implemented at the regional level.

Southern Waste Management Region

- **Paint Reuse**. In Limerick, members of the local community can collect and use tins of paint at the Civic Amenity Centres for individual or community projects.
- **West Limerick Resources Furniture Upcycling Project**. The project combines waste prevention and training. Furniture items donated by citizens or coming from recycling centres are fixed and improved before being sold to reimburse operating costs. People participating in the project receive training on the techniques to apply.
- **Upcycling schemes for bikes and children's toys and clothes**. There are several reuse and upcycling schemes for bicycles, children's toys and clothes in the Southern Region. They contribute to job creation, waste prevention and giving new value to items. They also help households to reduce their spending by providing cheaper second-hand products.
- **Upcycling workshops**. Local authorities organised workshops for citizens and businesses on upcycling processes and solutions to increase sustainability in waste management.
- **Assistance to local communities and local businesses**. The SRWMO supports local communities and businesses in becoming more resource-efficient, saving money and preventing waste. This assistance includes free onsite efficiency audits for waste, energy and water, recommendations for improvement and how to implement change, and staff training and mentoring.

Eastern-Midlands Waste Management Region

- **Waste prevention**. In co-operation with local authorities, the EMRWO provides several environmental education and awareness-raising programmes. The aim is to improve citizens' and communities' capacities to minimise waste, reuse materials and recycle. These programmes are linked with national awareness-raising initiatives such as Green Schools, an environmental management and education programme for schools, Green Campus, which aims to engage campus community members in sustainability on campus and Stop Food Waste, the national public-facing campaign for household food waste prevention delivered by the EPA since 2009.
- **Resource efficiency**. The EMRWO and local authorities support businesses in improving their waste management to reduce costs, avoid resource loss and enhance sustainability. These activities are co-ordinated with similar national programmes such as the EPA's NWPP.
- **Schools Composting Project**. As part of this pilot project, in partnership with local authorities, 100 primary and secondary schools are receiving a composting system. The pilot includes a suite of compost training resources including a website, video tutorials, master composter training, an online repository and classroom materials.
- **Green public procurement training**. In partnership with a range of stakeholders, this initiative aims to deliver a nationwide training course for local authority staff on implementing Green public procurement regulations and mechanisms. The training goes beyond procurement staff to include staff in all sections of local government and at all levels of the organisation. While the

initiative is nationwide, it is still at a developmental stage and benefitting from EMRWO support in setting up and organising the training.

Connacht-Ulster Waste Management Region

- **Business and community**. The CURWMO supports local communities, businesses and third-level institutions in improving resource efficiency by circulating and distributing guidance, materials and information on commercial waste separation, domestic waste separation, waste prevention and reuse activities delivered through Reuse Month, in addition to expertise and support to local authorities and business networks.
- **Bounce Back**. The CURWMO supports Bounce Back Recycling, a mattress recycling social enterprise combining waste prevention, reuse and training through promotion at the local authority level for the provision of mattress reuse services. Mattresses are provided by citizens or recycling centres and are deconstructed to reuse materials in new products where possible, allowing the diversion of 50 000 mattresses from landfill since 2017.

Source: OECD virtual mission to Ireland, 6-9 July 2021; written input from RWMPO representatives, October 2021.

Local authorities

The Local Government Reform Act 2014 granted new responsibilities to local authorities, with implications for the implementation of a circular economy on the ground. Until 2014, local authorities were responsible for housing, planning, local roads, water supply and sewerage, environmental protection, recreation facilities and amenities, and others. With this reform, local authorities also gained responsibilities in planning, local and community development, and supporting economic development and enterprise at a local level. The reform merged 114 local councils into 31, including 3 city councils, 2 city and county councils and 26 county councils (OECD, 2018[14]) (Box 2.3).

Local councils have limited spending responsibilities but play a key role in public investment. Ireland has one of the lowest shares of subnational expenditure relative to gross domestic product (GDP) among OECD countries (8% in 2016 compared to the OECD average of 9.2% and an EU average of 15.5%) (OECD, 2018[14]). On the other hand, subnational governments carry out more than half of public investment, although this investment is often made on behalf of the national government to implement national investment programmes (OECD, 2018[14]). Local authorities also have a strategic role to play in embedding the circular economy across sectors at the local level given their role in planning through Local Economic and Community Plans.

Local authorities are well placed to identify, map and provide support for circular initiatives at the civil society and business levels locally. Their knowledge of the local context and actors also means that they can play an important role in bridging gaps between sectors, as well as between research, policy and business. However, tasks related to litter control and complaints tend to take up much of local authorities' human resources to the detriment of promoting the circular economy. Local authorities participate in waste planning through regional waste steering committees. They also exchange information with national government and government agencies (e.g. RWMPOs partnering with the EPA on circularity initiatives). The Local Authority Prevention Network (LAPN) in particular, an EPA network aiming to build capacity on waste prevention and resource efficiency within local authorities, has provided significant support to the scaling up of local initiatives to the national level.

Irish cities, and notably Dublin, are home to different types of circular economy initiatives. Dublin City Council identifies the circular economy as a sector that it wishes to support in its Corporate Plan 2020-2024, along with green business, tourism and food among others (Dublin City Council, 2020[19]). Dublin will host the Circular Economy Hotspot 2023 conference alongside Santiago, Chile, and Lagos,

Nigeria, which will be the occasion to showcase Ireland's and Dublin's circular policies, businesses and initiatives (Rediscovery Centre, 2021[20]). Recognising the lack of awareness on the circular economy among businesses, Dublin City Council and the Local Enterprise Office Dublin City are supporting Profit with Purpose Magazine, a biannual publication seeking to raise awareness of and inspire action for a sustainable economy, including the circular economy. Dublin is one of four European cities to host the Circular Cities ClimAccelerator, along with Athens (Greece), Berlin (Germany) and Copenhagen (Denmark). The accelerator recruits and supports European start-ups that want to advance circular economy solutions that contribute to more circular and sustainable urban environments (Trinity College Dublin, 2021[21]). Dublin is also home to the Rediscovery Centre, Ireland's National Centre for the Circular Economy (see sub-section on capacity building below). Other cities such as Limerick are starting to incorporate circular economy principles in city projects (e.g. Limerick's Opera Site project; see sub-section on the built environment in Chapter 3).

Smaller towns and rural areas in Ireland are far from devoid of circular economy initiatives. In fact, local authority stakeholders highlighted that small-scale initiatives related to the circular economy are widespread and very popular in rural Ireland, notably second-hand clothes markets and activities linked to crafts and do-it-yourself such as furniture upcycling. The RepairMyStuff website, an online platform that connects people with local repair businesses, is an initiative of Monaghan County Council, supported by other local authorities, the EPA and the repair industry. Many other local projects are in place, such as Plastic Free Roscommon, a civil society initiative supported by Roscommon County Council that helps to raise awareness and take action to reduce the use of plastics locally. The initiative has, for instance, organised exchange events and repair cafés and encourages Roscommon residents and businesses (e.g. butchers, cafés) to subscribe to the "bring your own reusables" principle.

Government-led initiatives on the circular economy in Ireland

Over the past two decades, the Irish government and government agencies, notably the DECC and the EPA, have implemented many waste prevention and circular economy initiatives, including economic instruments incentivising waste prevention, different forms of stakeholder engagement and capacity building on waste and the circular economy.

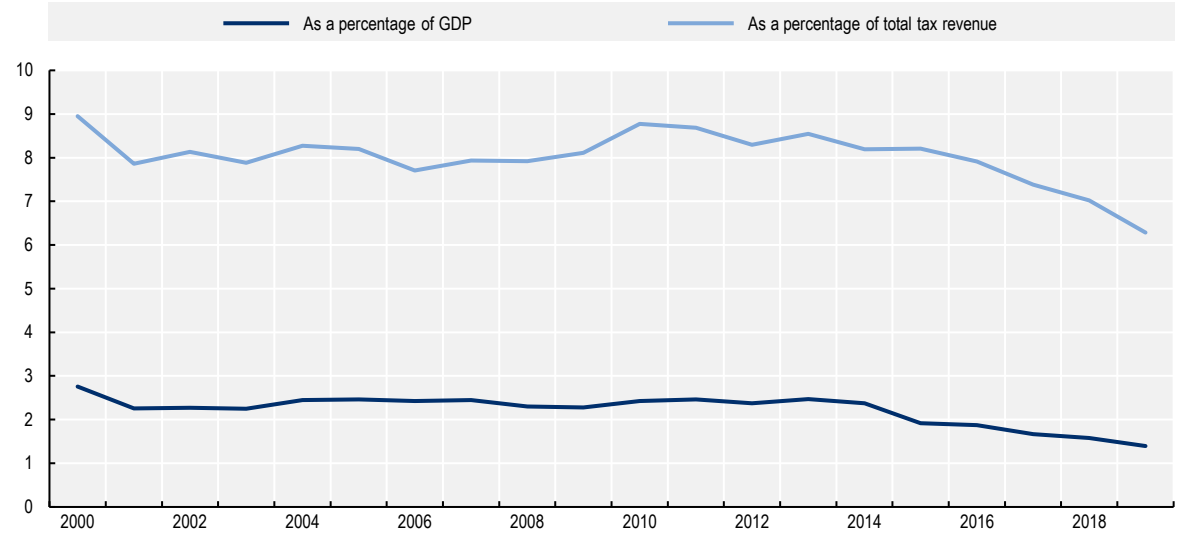
Economy and finance

Economic instruments

The Irish government has implemented two key price-based measures to reduce waste generation and limit the use of landfills: the plastic bag levy and the landfill levy. The environmental levy on plastic bags was introduced in 2002 under the Waste Management (Amendment) Act, 2001 at a rate of EUR 0.15 per bag, which increased to EUR 0.22 in 2007 (Box 2.3). The tax led to a 97.5% decrease in plastic bag use, from roughly 328 to 8 bags per capita annually in 2018. The levy also contributed to significantly reducing the share of plastic bags in litter, from 5% in 2001 to 0.13% in 2015; however, shopping bags accounted for 0.5% of litter in Ireland in 2020 (DECC, 2020[22]). Additionally, the share of plastic bags in marine litter decreased from 5% in 2001 to 0.25% in 2010. The landfill levy was also introduced in 2002 under the remit of the Department of the Environment, Community and Local Government (now the DECC). As a result, waste incineration with energy recovery replaced landfilling to a great extent, reaching over 40% of municipal waste treatment in 2018 (OECD.stat, 2021[23]). Revenues collected from both the landfill and the plastic bag levy feed into the Environment Fund (Box 2.3). The highest amounts collected were EUR 27 million for the plastic bag levy in 2008 and EUR 52 million for the landfill levy in 2012 (EPA, 2020[24]). In 2019, revenue amounted to EUR 6 million for the plastic bag levy and EUR 12 million for the landfill levy. The decreasing revenue collected from these levies are a testimony to their effectiveness in

achieving their respective intended outcomes but it also contributed to environmentally related taxes making up a decreasing share of total tax revenue and GDP in Ireland (Figure 2.2).

Figure 2.2. Environmentally related tax revenue in Ireland, 2000-19



Note: Database last updated in December 2020.
Source: OECD.stat (2020[25]), *Environmentally Related Tax Revenue*, https://stats.oecd.org/Index.aspx?DataSetCode=ERTR (accessed on 13 December 2021).

Box 2.3. Plastic bag levy in Ireland: Introduction, acceptance and use of revenues

Why a levy on plastic bags in Ireland?

Plastic bag consumption increased alarmingly with economic growth in Ireland in the 1990s. Retail outlets placed no limits on the number of bags dispensed to customers. The disposal of plastic bags created challenges related to their highly visible aspect in litter and slow degradation in landfill. A 1998 study by the Ministry for the Environment and Local Government concluded that a plastic bag levy was the most appropriate and effective means of minimising plastic bag consumption. Ireland was one of the first countries to introduce this levy in 2002. It was intended as an anti-litter measure aimed at reducing the use of disposable bags, accounting for 5% of Ireland's litter in 2001. Prior to its introduction in 2002, an estimated 1.2 billion plastic bags were dispensed free of charge across the country annually.

Addressing concerns and improving acceptance

The introduction of the levy faced initial opposition. Retailers were concerned about taking the blame for charging for bags by customers and butchers, for example, were worried that the decrease in the use of plastic bags would weaken hygiene standards for meat products. These concerns were addressed by a EUR 358 000 publicity campaign supported by the Department of the Environment, Heritage and Local Government, which significantly reduced public resistance. In addition, the government introduced exemptions, for example, for plastic bags used to separate food for hygiene and food safety purposes. The government also ensured that administration costs were kept to a minimum for retailers. The limited impact on jobs in plastic bag manufacturing, due to the fact that 80% of plastic bags are imported, also contributed to the levy's acceptance. In 2003, a national survey carried out by the Department of the Environment, Community and Local Government reported that 91% of

respondents were in favour of the levy. The survey underlined that the levy's success was related to its positive impact on the environment and litter, and the positive perception of reusable bags.

Revenue used for environmental projects

Levy revenues feed into the Environment Fund, which aims to finance environmental initiatives in Ireland and cover the levy's administrative costs. Revenues have been used to finance: environmental projects aimed at preventing, reducing or recovering waste; research on waste management; implementation of waste management plans; promotion of awareness campaigns; education and training for local initiatives for environmental protection. By the end of 2015, plastic bag levies had generated EUR 234 million in revenue but the amount collected decreased from more than EUR 17 million in 2010 to EUR 5 million in 2019 due to the reduced use of plastic bags.

Source: OECD (2021[17]), *OECD Environmental Performance Reviews: Ireland 2021*, https://dx.doi.org/10.1787/9ef10b4f-en; Anastasio, M. and J. Nix (2016[26]), *Plastic Bag Levy in Ireland*.

The WAPCE foresees the introduction of several price-based measures to incentivise waste reduction and resource efficiency. Through the new Circular Economy Bill, a "latte levy" should be introduced on single-use cups and a waste recovery levy of EUR 5 per tonne applying to recovery operations at municipal solid waste landfills, waste-to-energy plants, co-incineration plants and the export of municipal solid waste. Furthermore, the impact of the landfill levy exemption for biowaste will be analysed and potentially removed. The DECC will examine price-based measures to encourage the use of recycled materials in packaging and construction, notably on virgin plastics and construction aggregates. The income generated by these levies is foreseen to support a reconfiguration of the Environment Fund to become Ireland's Circular Economy Fund, whose revenues will support environment and circular economy initiatives.

Financial support schemes

A number of government-funded financing schemes support the transition to a circular economy, catering to academia, the public sector, businesses and social enterprises. All non-domestic heat users (e.g. commercial, industrial, agricultural, district heating and public sector) can benefit from the government's Support Scheme for Renewable Heat**,** which offers operational support for users switching to a biogas-based anaerobic digestion heater, among other forms of renewable heating (SEAI, 2021[27]). EPA Research 2030, the EPA's research programming high-level framework for 2021 to 2030, supports a green and circular economy through research activities (EPA, 2021[28]). The green and circular economy represent one of the framework's four interconnected themes, along with climate change, protecting and restoring the environment, and delivering a healthy environment. In October 2021, EPA Research issued a call for projects providing funding of up to EUR 10.55 million in total, of which 24% for 26 projects under "Facilitating a green and circular economy" (Table 2.2) (EPA, 2021[29]). The EPA-led National Waste Prevention Programme (NWPP) also provides funding to micro-level initiatives led by or within local authorities. In 2020, 15 local authorities were successful in obtaining funding of EUR 89 000 to carry out 36 community-based circular economy initiatives including the reuse and repair of musical instruments and paint reuse projects.

Table 2.2. Funded projects for "Facilitating a green and circular economy" under EPA Research Call 2021

Call topic titles	Maximum budget per project (EUR thousand)
Identify the regulatory levers needed to develop new markets for renewable carbon	100
"By-product" material as a nationally useful secondary raw material via the by-product regulatory mechanism	100
Recovered waste as a nationally useful secondary raw material via the end-of-waste regulatory mechanism	100
Circular business models for Ireland	350
Edible packaging, opportunities to prevent waste including microplastics arising from plastic and cardboard	100
Explore "best practice" "Natural Branding" technologies to reduce plastic branding on food	100
Identifying the scale of plastic in compost derived from household sources	100
Explore food waste associated with "home working" since 2020	100
Opportunities of green public procurement (GPP)	200
Awareness-raising tools to address avoidable plastic waste arising from sanitary products and disposable nappies	100
Consumer awareness and behaviour change communications strategy to support sustainable consumption of clothing in Ireland	150
Artificial intelligence to facilitate the circular economy in Ireland	150
Sustainable and circular bio-based cities – BioCities	500
Material flows of virgin and recycled plastic resources in the Irish economy	150
The impact of increases in online sales associated with the COVID-19 pandemic on national waste generation	100
Critical raw materials for Ireland	100
Total	**2 500**

Source: EPA (2021[29]), *Closed Calls*, epa.ie/our-services/research/epa--research-funding/epa-research-calls/closed-calls/#d.en.89556 (accessed 13 December 2021).

On the business side, the EPA's Green Enterprise: Innovation for a Circular Economy annual funding programme supports the demonstration of sustainable circular economy solutions, designing out waste and pollution and keeping products and materials in use for longer (EPA, 2021[30]). The 2021 call provides EUR 625 000 in funding and a maximum of EUR 100 000 available per grant award, covering between 25% and 95% of total eligible project costs. CIRCULÉIRE, a public-private partnership created by Irish Manufacturing Research, the DECC, the EPA and the European Institute of Innovation and Technology (EIT) Climate-KIC with 25 founding industry members, supports large-scale systems-level circular economy innovation in the manufacturing sector, through its EUR 1.5 million ring-fenced innovation fund (CIRCULÉIRE, 2020[31]). Companies applying for funding are asked to present demonstrations of circular economy solutions for a defined problem, preferably with a high replicability potential and GHG emission reductions. Enterprise Ireland, the government organisation that supports the development and growth of Irish enterprises in global markets, supports Irish companies with Climate Action Vouchers of EUR 1 800, which are fully payable as grants (Enterprise Ireland, 2021[32]). These vouchers give access to up to two days of independent technical or advisory services support related to the current and future operations of the business on four different themes, including one on circular economy thinking. Finally, the DECC-led Circular Economy Innovation Grant Scheme (CEIGS) focuses on supporting social enterprises and voluntary and community-based organisations. The scheme supports circular economy projects to advance the circular economy in Ireland and raise awareness around the need for a transition to a circular

economy. In 2021, the DECC awarded EUR 490 000 to projects promoting the circular economy in Ireland. Initially set to award EUR 250 000 in grants, an additional EUR 240 000 envelope was secured thanks to the quality of successful applications in a variety of sectors such as fashion, marine plastics, reusable food packaging and construction (DECC, 2021[33]).

Stakeholder engagement

Engaging with stakeholders has been a key part of Ireland's transition from a linear to a circular economy, in line with international experience. The DECC and the EPA have run several communication campaigns and consultation processes to raise awareness and foster stakeholder engagement in circular economy policy making. Eight-week public consultations open to all Irish citizens, businesses and organisations are systematically carried out to inform government strategies, action plans and policy documents, including the Waste Action Plan for a Circular Economy (WAPCE) and the Circular Economy Strategy, among others. For example, the WAPCE received almost 300 contributions from a variety of actors after an 8-week public consultation on its draft action plan in 2020. The DECC and EPA have also favoured participation and partnerships, albeit to a slightly lesser extent. Key examples include the Waste Advisory Group for the development of the WAPCE, and ongoing EPA partnerships with a range of stakeholders (e.g. with local authorities as part of the Local Authority Prevention Network (LAPN), with the Irish Farmers Association for the Smart Farming Programme, and with the Rediscovery Centre as part of the NWPP). The types and levels of stakeholder engagement identified for water governance in OECD countries (2015[34]) are equally relevant for securing the social and political buy-in needed for the transition to a circular economy (Box 2.4).

The EPA-led NWPP, now the Circular Economy Programme, has been instrumental in engaging stakeholders on waste prevention and the circular economy since 2004 (EPA, 2021[3]). The programme delivered national strategic programmes with high visibility, impact and influence to prevent waste and drive the circular economy by funding innovation and demonstration projects but also by partnering with organisations to deliver national initiatives (such as the Rediscovery Centre) and by advocating for waste prevention among businesses and households. As part of one of its three pillars on advocacy and communications, for instance, the EPA has delivered Stop Food Waste, a national public-facing campaign for household food waste prevention, since 2009 (see sub-section on food waste in Chapter 3). In the same vein as the NWPP, two of the four pillars of the revised Circular Economy Programme relate to engagement with policy makers, local authorities, social enterprises, businesses and the general public (advocacy, insights, data and co-ordination; and delivering through partnerships).

The EPA and RWMPOs are leading communication initiatives to raise awareness of the circular economy. The website mywaste.ie, managed by RWMPOs on behalf of the DECC, is the main information-sharing platform for waste management and the circular economy for households in Ireland, consisting of a website, a mobile phone application and social media pages. It aims to advise citizens and businesses on options for reusing, recovering and disposing of a wide range of materials. It also shares information about initiatives undertaken by the RWMPOs, as well as news and updates on the circular economy, resource efficiency and waste topics (MyWaste, 2021[35]). In addition, the EPA's Circular Economy Conference (15 and 16 September 2021), previously the National Waste Conference, took stock of progress and recent developments on the circular economy in Ireland and involved a wide range of stakeholders from the public, private and non-profit sectors, to discuss the challenges and opportunities in shifting towards a circular economy.

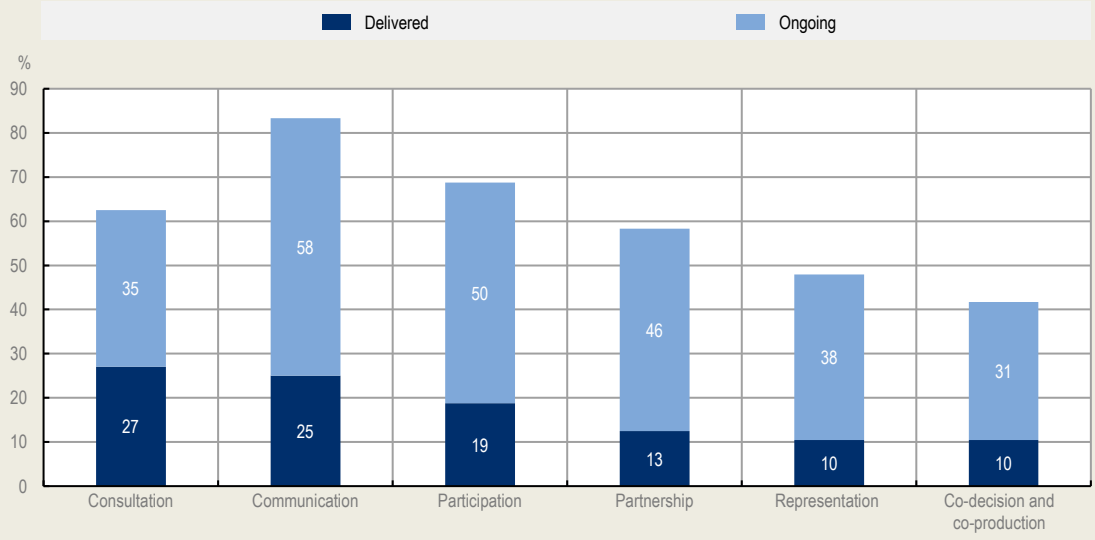
Box 2.4. Stakeholder engagement mechanisms

Different types of stakeholder engagement mechanisms can be implemented depending on available resources and the desired level of participation (OECD, 2015[34]).

- **Communication**: Aims to make the targeted audience more knowledgeable and sensitive to a specific issue.
- **Consultation**: Aims at gathering stakeholders' comments, perceptions, information, advice, experiences and ideas.
- **Participation**: Allows stakeholders to take part in the decision-making process and discussions and activities.
- **Representation**: Attempts to develop a collective choice by aggregating preferences from various stakeholders and often consists in having stakeholders' perspectives and interests officially represented in the management of a project or of an organisation.
- **Partnership**: Consists of an agreed-upon collaboration between institutions, organisations or citizen fora to combine resources and competencies in relation to a common project or challenge to solve.
- **Co-decision** and **co-production** are the ultimate levels of stakeholder engagement as they are characterised by a balanced share of power over the policy or project decision-making process.

From the 51 cities and regions surveyed in OECD (2020[36]), 27% had organised consultations, followed by communication activities (25%), participation (19%), partnership (13%) and only 10% had implemented co-decision and co-production initiatives.

Figure 2.3. Types of stakeholder engagement for the circular economy in 51 surveyed cities and regions



Source: OECD (2015[34]), *Stakeholder Engagement for Inclusive Water Governance*, https://doi.org/10.1787/9789264231122-en; OECD (2020[36]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en.

Box 2.5. The role of public consultations in the circular economy

The role of bottom-up public consultation mechanisms is significant on the road to circularity, as a starting point to collect ideas and proposals from stakeholders.

- In the case of the **Finnish roadmap** to a circular economy, the process started in 2016 with a general invitation to all citizens to participate in identifying the best pilots, trial ideas and practices. Hundreds of ideas were collected from participants from different sectors, including trade unions, organisations and the corporate field, the Ministry of the Environment, the Ministry of Agriculture and Forestry, the Ministry of Economic Affairs and Employment, environmental organisations, consumers and other stakeholders. This broad stakeholder engagement formed the basis for the key policies, projects and pilots proposed in the initial roadmap published in 2016. Consultation with stakeholders from a wide variety of stakeholders from different sectors was also a key component of the 2019 revision to the plan.
- The **Italian Ministry of the Environment** (now Ministry for Ecological Transition) promoted a two-month online consultation on the national strategic document on the circular economy from 12 July to 18 September 2017. About 3 900 people took part in the consultations and 300 organisations and institutions provided specific comments on the proposed text.
- The **Spanish Circular Economy Strategy** incorporated almost 2 000 observations from Autonomous Regions, the Spanish Federation of Municipalities and Provinces and citizens in 2018.
- For the development of the **French Circular Economy Roadmap**, launched in 2018, stakeholders gathered for two months in four workshops organised around the categories “territories”, “plastics”, “sustainable consumption and production” and “economic instruments”. In parallel, an online platform was opened to collect citizens’ opinions, which gathered nearly 1 800 contributions and more than 16 000 votes.
- In **Slovenia**, for the circular economy roadmap, 7 meetings took place physically in 12 different regions, in addition to 7 interactive stakeholder workshops. The roadmap was also presented for consultation at various events in nine European countries. Over 3 000 stakeholders took part in the design of the roadmap, with communication taking place within the framework of the Partnership for Green Economy and through an electronic newsletter. The public consultation process was reinforced through 19 structured interviews with key stakeholders from government departments, economic agents, interest groups and experts from individual fields.

Source: OECD (2020[36]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en.

The DECC, the EPA and Bord Bia, the Irish Food Board, are also supporting labels and certifications to raise awareness, increase transparency and ultimately shift consumption and production behaviours towards more circularity and sustainability. The Community Resources Network Ireland (CRNI) piloted ReMark, a quality standard for reuse organisations, with EPA Green Enterprise funding (April 2017-February 2019). ReMark aims to give consumers the confidence to buy from reuse organisations by addressing quality and safety concerns, two of the main barriers currently preventing Irish consumers from buying more second-hand products. The CRNI has now received DECC funding under the CEIGS to prepare ReMark for a national rollout, aligning with the DECC’s ambition to explore national circular economy branding. The Origin Green label led by Bord Bia, the Irish Food Board, enables food industry players in Ireland to set and achieve measurable sustainability targets that are independently assessed

and verified. The programme's large reach has raised awareness around sustainability in the Irish food system on a large scale. Further information on Origin Green can be found in Chapter 3.

Capacity building

Several government-led or government-supported initiatives provide capacity-building services on the circular economy to citizens, businesses, social enterprise and the public sector. The most far-reaching in terms of stakeholder groups is the Rediscovery Centre, Ireland's National Centre for the Circular Economy, which hosts a range of capacity-building activities aimed at students, the general public, policy makers and businesses (Rediscovery Centre, 2021[37]). The EPA and the EMRWO provide funding (including grant aid) and support for a range of projects and initiatives at the Rediscovery Centre. The centre works with primary, secondary and tertiary level education providers, and organises workshops for students at all levels of education and offers continuing professional development on the circular economy. It organises thematic workshops (e.g. on upcycling furniture), a Circular Economy Conversation Series and publishes a Circular Economy Blog to raise awareness and build capacity on the circular economy and waste prevention among the public. It also provides policy makers with data and information on the non-waste reuse sector in Ireland and provides information and analysis on circular economy policy at the international, EU, national and local levels. Finally, the Rediscovery Centre's Circular Economy Academy provides business support services for social enterprises and community organisations on circular business planning, development, funding, diversification and training.

Beyond the Rediscovery Centre's Circular Economy Academy, the EPA, the DECC and RWMPOs support a wide range of capacity-building services for businesses, including social enterprises and small- and medium-sized enterprises (SMEs). Initiatives range from tools supporting increased resource efficiency (EPA Tool for Resource Efficiency) and GHG mitigation (government Climate Toolkit 4 Business) to mainstreaming community-based reuse, repair and recycling activities (CRNI, which supports social enterprises and local organisations through a range of services including networking, funding support, training and promotion). Micro enterprises and SMEs can benefit from the Modos Circular Economy Training Programme, developed as a joint project between Dublin City Council's Economic Development Office and the EMRWO, now operating nationwide in partnership with all RWMPOs. Modos offers a training programme, a mentoring and innovation award programme, webinars and business events (Modos, 2021[38]).

Government-supported initiatives are also sector-specific, notably for manufacturing (CIRCULÉIRE) and agriculture (SmartFarming programme and Bioeconomy Ireland week; see further details in Chapter 3). CIRCULÉIRE is Ireland's national platform for circular manufacturing and a prominent actor in Ireland's circular economy landscape. Irish Manufacturing Research (IMR) leads CIRCULÉIRE with the support of three strategic partners: the DECC, the EPA and Climate-KIC, which is co-funded by the EU. It offers a range of capacity-building activities, from bespoke industry training to thematic working groups that engage stakeholders from across the innovation ecosystem, and the first accelerator for late-stage circular economy ventures. Since 2020, CIRCULÉIRE has hosted six thematic working groups on topics including circular bioeconomy, industrial symbiosis, circular procurement, circular packaging, circular plastics and circular design. CIRCULÉIRE has disseminated the results of the latter three working groups, carried out in 2021, via webinars. All outputs are published in Ireland's first open-access Circular Economy Knowledge Library (CIRCULÉIRE, 2021[39]).

Other government-supported capacity-building initiatives target citizens and young people in particular. Reuse Month, which has been led by a range of circular economy stakeholders such as RWMPOs and the CRNI every October since 2016 in Ireland, sees a wide range of activities, events and happenings designed to educate, inform and ultimately enact behavioural change. Citizens are encouraged to repair, upcycle, donate, share and generally extend the life of items. The national Conscious Cup Campaign is a government-funded campaign that specifically encourages citizens to use reusable rather than disposable

beverage cups, and encourages cafés to accept and promote reusables (e.g. by slightly reducing the price of beverages for customers bringing their own cup) (Conscious Cup Campaign, 2021[40]). Targeting sports clubs and enthusiasts, the Gaelic Athletic Association (GAA) and a broad range of national stakeholders, including RWMPOs, have set up the GAA Green Clubs Reuse Initiative. It aims to encourage the hundreds of thousands of GAA members across Ireland to move from using single-use plastic reusable water bottles during sports practice, matches and everyday life through communications campaigns and toolkits for sports clubs.

Different levels of government can benefit from capacity-building programmes on waste prevention and resource efficiency. The Local Authority Prevention Network (LAPN) is a key initiative aiming to build capacity on waste prevention among local authorities. As a co-operative programme between the EPA and local authorities, it provides technical support, training and networking and grant aid funding for local authorities on local waste prevention and circular economy activities (LAPN, 2021[41]). The NWPP also partners with RWMPOs on waste prevention activities: in 2019, these activities included a national survey on behaviours, usage, attitudes and preferences for plastic and the 2019 Upcycle Challenge, a competition aiming to stimulate creativity for reuse (EPA, 2020[42]). At the national level, in 2019, the NWPP provided guidance on developing Resource Efficiency Action Plans that drive government departments to save water, materials and energy, prevent food waste and maximise recycling at work.

Similarly, different levels of government can take part in green and circular public procurement capacity-building initiatives. Ireland sees setting mandatory requirements for GPP as an opportunity for the public sector to lead by example (OECD, 2020[36]). Public sector purchasing accounts for 10% to 12% of Ireland's annual GDP, in line with the OECD average of 12% (OECD, 2021[43]). As such, GPP has the potential to build a critical mass for demand for sustainable and circular goods and services, effecting changes in markets beyond regulation (EPA, 2020[24]). Current capacity-building initiatives on GPP focus on:

- **Including green and circular criteria in public procurement**. The EPA's *Green Public Procurement: Guidance for the Public Sector* (EPA, 2021[44]) provides guidance and a toolkit for public procurers to include green criteria in key sectors for the circular economy such as construction, transport, energy, food and catering, textiles, cleaning products, paper and information and communication technology (ICT) equipment. Training events for procurers, from organisations across the public sector, have been running in 2020 and 2021, aligned to GPP guidance provided by EPA through the NWPP.
- **Driving eco-innovation through GPP**. The DECC is part of the EU Interreg project GPP4Growth, which gathers nine EU countries to exchange good practices and improve capacities in implementing resource efficiency policies that promote eco-innovation and green growth through GPP (Interreg Europe, 2021[45]).
- **Accelerating the adoption of GPP in local authority procurement processes**. A steering group composed of the EPA, the Climate Action Regional Offices, the RWMPOs, the Office of Government Procurement and local authorities are currently organising a training programme for local authorities on GPP. In 2019, the LAPN supported a partnership between Clare, Dublin City, Limerick and Mayo County Councils to deliver eight training workshops on "Designing out waste and sustainable procurement in construction" to local authority architects, quantity surveyors, planners, procurement, design and delivery staff (EPA, 2020[42]). Building on findings of a circular procurement synthesis report and the outcomes of a thematic working group involving over 25 stakeholders, CIRCULÉIRE and IDDEA published *Circular Procurement 2020* (CIRCULÉIRE/IDDEA, 2021[46]). It explains core circular procurement concepts and highlights opportunities as well as best practice examples from other EU countries.

Table 2.3. Initiatives related to the circular economy in Ireland

Areas	Initiatives	Type of activities	Ownership	Characteristics and objectives
Economy and finance	Plastic bag levy	Prevention	DECC	Anti-litter levy aimed at reducing the use of disposable plastic bags.
	Landfill levy	Prevention	DECC	Levy aimed at reducing the share of waste going to landfill.
	Latte levy (expected 2022)	Prevention	DECC	Levy on single-use cups to incentivise the use of reusable cups.
	Waste recovery levy (expected 2022)	Disposal	DECC	Levy on recovery operations at municipal solid waste landfills, waste-to-energy plants, co-incineration plants and the export of municipal solid waste.
	Support Scheme for Renewable Heat	Recycling	Sustainable Energy Authority of Ireland	Provides operational support to users switching to a biogas-based anaerobic digestion heater, among other forms of renewable heating.
	National Waste Prevention Programme (NWPP) funding	Prevention	EPA	Provides funding to micro-level initiatives led by or within local authorities through the Local Authority Prevention Network (LAPN).
	Climate Action Vouchers	Prevention Reuse Recycling	Enterprise Ireland	Provides businesses with up to EUR 1 800 in vouchers to access up to two days of independent technical or advisory services support on circular economy thinking, among other themes.
	CIRCULÉIRE Innovation Fund	Prevention Reuse Recycling	CIRCULÉIRE	Financially supports large-scale systems-level innovation for circularity in the manufacturing sector.
	Green Enterprise: Innovation for a Circular Economy fund	Prevention Reuse Recycling	EPA	Financially supports the demonstration of circular economy solutions.
	EPA Research 2030	Prevention Reuse Recycling	EPA	Addresses medium- to long-term policy needs by setting priorities in research programming. The 2021 EPA Research Call anticipated EUR 2.5 million in funding for green and circular economy projects.
	Circular Economy Innovation Grant Scheme (CEIGS)	Prevention Reuse Recycling	DECC	Financially supports social enterprises and voluntary and community-based organisations' circular economy projects with a view to raising awareness on the need for a transition to a circular economy.
Stakeholder engagement	Public consultations on waste and circular economy policy	Prevention Reuse Recycling Disposal	DECC and EPA	Eight-week public consultations organised to inform key circular economy policies including the WAPCE, the Whole of Government Circular Economy Strategy and the Circular Economy Programme.
	Waste Advisory Group/Circular Economy Advisory Group	Prevention Reuse Recycling Disposal	DECC	A multi-stakeholder advisory group that informed the WAPCE and whose members have been invited to take part in the Circular Economy Advisory Group to support the Whole of Government Circular Economy Strategy's implementation and provide input for subsequent iterations.
	Strategic EPA partnerships	Prevention Reuse Recycling	EPA	Strategic partnerships to advance common circular economy goals. Examples include the LAPN, the Rediscovery Centre, CIRCULÉIRE and the Smart Farming Programme.
	Stop Food Waste programme	Prevention Recycling	EPA	A national public-facing campaign that provides information and raises awareness on food waste prevention and composting.
	MyWaste.ie	Prevention Reuse	RWMPOs	Provides information and advises households and businesses on options for reusing, recovering and disposing of a wide range of materials.

Areas	Initiatives	Type of activities	Ownership	Characteristics and objectives
		Recycling Disposal		
	National Waste Conference/ Circular Economy Conference	Prevention Reuse Recycling	EPA	Involve a wide range of stakeholders from the public, private and not-for-profit sectors on the circular economy.
	ReMark	Reuse	CRNI	Aims to give consumers the confidence to buy from reuse organisations via labelling.
	Origin Green	Prevention Reuse Recycling Disposal	Bord Bia	Certification scheme for food industry players that set and achieve measurable sustainability targets, which are then independently assessed and verified.
Capacity building	Tool for Resource Efficiency	Prevention Reuse Recycling Disposal of materials	EPA	Supports businesses in analysing and understanding their level of resource efficiency.
	Government Climate Toolkit 4 Business	Prevention Reuse Recycling Disposal of materials	Government of Ireland and partners	Supports businesses in analysing, understanding and taking action on their carbon footprint.
	Community Resources Network Ireland (CRNI)	Prevention Reuse Recycling	CRNI	A representative body for community-based reuse, repair and recycling organisations that provides support via networking, funding support, training and promotion.
	Rediscovery Centre	Prevention Reuse Recycling	Rediscovery Centre	Ireland's National Centre for the Circular Economy organises workshops for students and thematic workshops (e.g. on upcycling furniture) to citizens and provides policy makers with data and information on the non-waste reuse sector in Ireland and circular economy policy and regulation at international, EU, national and local level.
	Rediscovery Centre's Circular Economy Academy	Prevention Reuse Recycling	Rediscovery Centre	Free mentoring support programme to assist social enterprises and community organisations in increasing sustainability in their activities and embracing the circular economy.
	Reuse Month (October)	Prevention Reuse Recycling	Multiple stakeholders	Organise a wide range of activities to educate, inform and ultimately enact behavioural change. Citizens are encouraged to repair, upcycle, donate, share and generally extend the life of items.
	Conscious Cup Campaign	Prevention	Conscious Cup Campaign	Encourages citizens to use reusable rather than disposable cups and encourages cafés to accept and promote reusables (e.g. by slightly reducing the price of beverages for customers bringing their own cup).
	Green Clubs Reuse Initiative	Prevention	Gaelic Athletic Association (GAA)	Encourages GAA members to move from single-use plastic reusable water bottles during sports practice, matches and everyday life through communications campaigns and toolkits for sports clubs.
	CIRCULÉIRE	Prevention Reuse Recycling	CIRCULÉIRE	Public-private partnership supporting manufacturers and their value chains to increase circularity in their businesses.
	Smart Farming programme	Prevention Reuse	EPA and Irish Farmers	Providing tailored advice to farmers on low-cost solutions to increase resource efficiency, among other means to reduce

Areas	Initiatives	Type of activities	Ownership	Characteristics and objectives
		Recycling	Association	environmental impact.
	NWPP	Prevention Reuse Recycling	EPA	Seeks to prevent waste and drive the circular economy by delivering national-level strategic programmes with high visibility, impact and influence.
	Local Authority Prevention Network (LAPN)	Prevention Reuse Recycling	EPA, RWMPOs and local authorities	Provides technical support, training and networking opportunities for local authorities on waste prevention and circular economy activities. Also partners with RWMPOs on waste prevention activities.
	Modos	Prevention Reuse Recycling Disposal	RWMPOs	Circular economy training programme, mentoring, innovation award programme, webinars and events for micro enterprises and SMEs.
	CIRCULÉIRE Circular Procurement 2020	Prevention Reuse Recycling Disposal	CIRCULÉIRE	Explores and explains the role of circular procurement in fostering the circular economy in Ireland.
	Interreg Europe project GPP4Growth	Prevention Reuse Recycling Disposal	DECC	Exchange experience and practices among nine EU member states to build capacity in implementing resource efficiency policies that promote eco-innovation and green growth through GPP.
	Green Procurement Guidance for the Public Sector	Prevention Reuse Recycling Disposal	EPA	Guidance and a toolkit for public procurers to include sustainable and green criteria in key sectors for the circular economy such as construction, transport, energy, food and catering, textiles, cleaning products, paper and ICT equipment.

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Notes

[1] Formerly the Department of Communications, Climate Action and Environment (DCCAE).

[2] Thirty-six organisations were represented within the Waste Advisory Group, including industry associations and federations (e.g. Irish Waste Management Association, Irish Farmers' Association, Construction Industry Federation), government entities (e.g. Eastern-Midlands Regional Waste Office, Competition and Consumer Protection Commission, Environmental Protection Agency), trade unions (Irish Congress of Trade Unions) and networks (e.g. Irish Environmental Network, Community Resources Network Ireland).

[3] Since 2013, water services in Ireland have been operated by Irish Water, a subsidiary company of Ervia, which is a semi-state company (Irish Water, 2021[47]). All of the company board members, including nine non-executive members and the group chief executive officer, are currently appointed by the Minister for Housing, Local Government and Heritage.

[4] Regions within the 38 OECD countries are classified on two territorial levels (territorial level 2 [TL2] and territorial level 3 [TL3]) reflecting the administrative organisation of countries (OECD, 2021[48]). For European countries, this classification is largely consistent with the Eurostat Nomenclature of Territorial Units for Statistics (NUTS) 2016 classification.

3 The 3Ps framework for a transition to a circular economy: People, policies and places

This chapter analyses the potential of the circular economy in Ireland based on the OECD 3Ps conceptual framework – people, policies and places – previously applied to other policy domains including urban water management. The framework seeks to understand the enablers of the circular economy in cities, regions and countries, whereby: People are at the centre of a cultural shift towards different production and consumption pathways, and new business and governance models; a holistic and systemic approach allows for transcending sectoral Policies; and a functional approach goes beyond administrative boundaries to close, narrow and slow loops at the right scale (Places).

The 3Ps, developed as a framework to strengthen co-ordination across people, policies and places for urban water governance (OECD, 2016[1]), also provides a conceptual framework to understand the enablers of the circular economy in cities, regions and countries.

According to the OECD synthesis report on the circular economy in cities and regions (2020[2]):

- **People** are at the centre of a cultural shift towards new business and governance models within a circular economy, which is a shared responsibility across levels of government and stakeholders. For example, businesses determine the shift towards new business models (e.g. using secondary materials, recycling, sharing models, etc.), knowledge institutions contribute to boosting innovation and research, and non-profit organisations drive bottom-up initiatives in a wide range of sectors, such as food and the built environment, to raise awareness and build capacities.
- **Policies** should be coherent with one another, as a circular economy requires a holistic and systemic approach whereby somebody's waste can be somebody else's resource. As such, the circular economy provides the opportunity to foster complementarities across policies (e.g. environment, regional development, agriculture and industry).
- In terms of **Places**, adopting a functional approach, which considers material flows across urban and rural areas, where inputs and outputs are produced and consumed, is important for resource management and economic development, as these flows go beyond the administrative boundaries of government departments, regional and local administrations (OECD, 2020[2]).

People and firms

The transition towards a circular economy requires the participation and contribution of a wide range of stakeholders such as businesses, social enterprises, non-governmental organisations (NGOs), universities and knowledge institutions, the design community and citizens, among others. Different stakeholder groups have different interests and objectives in moving towards the circular economy. It is therefore essential to motivate and facilitate co-operation among stakeholders towards common aims, provide incentives and framework conditions to build synergies at the most effective level of government, and minimise negative outcomes for society.

Social enterprises

Social enterprises in Ireland contribute to product reuse and repair, sustainable manufacturing activities, but access to finance is a major concern. According to the most recent available data, Ireland is home to 1 400 social enterprises, employing 25 000 people and generating a total income of around EUR 1.4 billion (Forfás, 2013[3]). Irish social enterprises contribute to the circular economy in different ways, for instance by: i) connecting charity shops or repair businesses to consumers through online platforms (e.g. Thriftify and repairmystuff.ie); ii) promoting the reuse and sharing of items (e.g. Cloth Nappy Library Ireland); and iii) collecting and recycling objects to avoid them going to landfill (e.g. Bounce Back Recycling and Recycle IT), assisting 100 000 Irish households annually, as well as community groups and small- and medium-sized enterprises (SMEs) in the collection of waste electrical and electronic equipment (WEEE) and in raising awareness (Recycle IT, 2021[4]). The relevance of the social economy in the circular transition is also acknowledged by the European Union (EU) Circular Economy Action Plan (CEAP), which recognises the opportunities for job creation in circular economy-related activities (EC, 2020[5]).

The Community Resources Network Ireland (CRNI) is the all-island representative body for community-based reuse, recycling and waste prevention organisations funded by the National Waste Prevention Programme (NWPP) of the EPA (CRNI, 2021[6]). With 75% of members being social enterprises, the CRNI supports members through a range of services to expand the activities of reuse and repair organisations including networking, funding support, training and promotion among others. The Rediscovery Centre's

Circular Economy Academy also provides business support services for social enterprises and community organisations, and is home to four inhouse circular economy social enterprises:

- Rediscover Furniture, providing training opportunities for bringing old furniture to new life.
- Rediscover Fashion, producing redesigned and repurposed clothing, accessories and homeware ranges.
- Rediscover Paint, collecting paint from recycling centres and recycling it to create new colours.
- Rediscover Cycling, dedicated to building and reconditioning bicycles, and to providing training and employment opportunities.

However, Irish social enterprises generally have issues related to financial sustainability and access to credit. Despite having commercially viable proposals, some social enterprises struggle to meet conventional risk criteria applied by banks for loans, beyond micro credit provided by the Social Finance Foundation, the Tallaght Trust Fund and the County and City Enterprise Boards (Forfás, 2013[3]). Social enterprises can seek Department of the Environment, Climate and Communications (DECC) funding via the Circular Economy Innovation Grant Scheme (CEIGS), which provided EUR 490 000 in grants in 2021, for their circular economy projects. Although it supports circular projects and businesses broadly, the CEIGS is particularly interested in supporting social enterprises and voluntary and community-based organisations (see sub-section on economy and finance in Chapter 2).

Businesses

A number of multinational companies and SMEs in Ireland are starting to apply circular economy principles to their operations, driven by increasing consumer and shareholder demand for sustainability, and a desire to increase supply chain resilience. Irish companies introducing circularity in their business models generally begin by reducing waste (including packaging materials in their supply chain) and implementing energy efficiency measures, with a view to reducing their costs and carbon footprint. Retailers are increasingly introducing take-back schemes and offering repair services following consumer demand. New businesses are also launching with circular business models, such as GoCar, a car-sharing company that seeks to provide an alternative to owning a private vehicle (GoCar, 2022[7]).

Multinationals have more resources to implement circularity initiatives and disseminate them, but the circular economy is a core part of certain Irish SMEs. Large multinational corporations operating in Ireland are testing inhouse deposit return schemes (e.g. Lidl), recycling textiles (e.g. H&M) and working with NGOs to enhance circularity in supply chains (e.g. Burberry and Oxfam). Irish SMEs using circular processes include cement manufacturers represented by Cement Manufacturers Ireland that combine energy recovery from municipal solid waste and recycling of the inorganic components of solid recovered fuels inside the cement kilns into their final cement product (see the sub-section below on the built environment).

Industry-wide initiatives supporting companies in their circular transition, such as CIRCULÉIRE, are essential but in short supply beyond the manufacturing sector. CIRCULÉIRE, the national platform for circular manufacturing in Ireland (see Chapter 2), supports manufacturing companies to deliver circular business models within their company and supply chain. Companies can implement repair activities to rectify faults and keep products in use for longer or refurbish a product to make it fit for use again. Other business models include product-service-systems, peer-to-peer or business to consumer (B2C) sharing of business equipment, disassembly, restoration, replacement, as well as and repair activities.

Challenges in scaling up circular initiatives and fully transitioning towards circular business models remain for businesses large and small. Business representatives interviewed during the OECD virtual mission to Ireland in October 2020 identified operational, informational and legislative barriers to the circular economy transition in the private sector. First, operational changes to increase circularity in value chains can be challenging for companies to implement: larger companies struggle to influence supply chains due to their global nature, while smaller companies do not always have the financial and human resources required to

shift towards circular business processes, models or technologies. The limited capacity and time of SMEs can also be an obstacle preventing them from applying for grants and funding. Regarding information, the lack of relevant and timely data on the circular economy and its contribution to sustainability and notably carbon emission reductions can compromise the interest of larger companies to opt for more circularity. Smaller companies generally have more limited awareness of the stakes and benefits of transitioning to circular business models than larger corporations. Finally, the Irish legislative and fiscal framework is, at best, not conducive to circular business and, at worst, incentivises linear business models. Regulation and standards are struggling to keep up with the pace of innovation, which hinders the certainty needed to make the business case for circular materials and products. Additionally, public procurement still tends to favour projects with the lowest initial investment cost rather than considering life-cycle costs, which can be unfavourable to circular projects.

Knowledge institutions

Research in Ireland is prioritised through Research Prioritisation, introduced in 2012, which aims to align the bulk of competitively awarded public investment in research with 14 priority areas (DETE, 2018[8]). Under Innovation 2020, Ireland's overarching research strategy, the Department of Enterprise, Trade and Employment (DETE) leads Research Prioritisation to direct investment towards strategic areas of commercial opportunity (DETE, 2015[9]). However, the circular economy is not identified as a standalone priority within the most recent iteration of Research Prioritisation (2018-2023) but as a means of achieving the sub-priority of "Sustainable living" under the priority "Energy, climate action and sustainability". Sustainable Living is linked to United Nations (UN) Sustainable Development Goal (SDG) 12 on "Sustainable production and consumption" and aims to realise the opportunities in enterprise sectors including the circular economy, new emerging markets in waste, water and infrastructure management, and the non-food elements of the bioeconomy (e.g. biorefining). In turn, the circular economy is expected to emerge from research addressing as part of sub-priority "Manufacturing and novel materials" under the "Manufacturing and materials" priority theme.

Several knowledge institutions and universities in Ireland are actively contributing to the circular transition by carrying out research to prove the feasibility of circular economy solutions and providing education programmes and training material. For instance:

- Trinity College Dublin and Irish Manufacturing Research (IMR) have jointly identified promising entrepreneurial and business activities related to the circular economy, with a view to supporting the technology upgrade required for commercialisation.
- The Environmental Research Institute at University College Cork (UCC) is an active institution in circular economy research. With over 400 researchers, the centre has developed more than 30 circular economy projects in fields including water, food, green gas, materials reuse, chemicals, return schemes and e-waste (UCC, 2021[10]).
- The University of Limerick manages education projects for enhancing circular economy skills in SMEs. The university is involved in the EU-funded Erasmus+ project Circular Design: Learning for Innovative Design for Sustainability to develop skills across students and practitioners (Circular Design, 2021[11]). Additionally, having contributed to Environmental Protection Agency (EPA) reports on (waste from) electrical and electronic equipment (EEE/WEEE), the university has developed a strong competency in this area. It also hosted the Product Lifetimes and the Environment (PLATE) Conference on product lifetimes and the environment in May 2021 (PLATE, 2021[12]).
- The Clean Technology Centre (CTC) established in Munster Technological University in 1992 has informed national policies and initiatives, provided businesses with consultancy services and supported local authorities in improving resource efficiency and transitioning to the circular economy (CTC, 2021[13]). Munster Technological University offers an accredited Certificate in

Circular Economy. The Springboard+ distance-learning programme aims at developing skills within businesses to contribute to the development of a sustainable circular economy, covering the technological, environmental, economic and social aspects.

- The Department of Building and Civil Engineering in the Galway-Mayo Institute of Technology (GMIT) has a dedicated Build360 research group that focuses on the circular built environment. This group has led several EPA projects on construction and demolition waste management, resource efficiency and the circular economy over the past 20 years. The GMIT offers a postgraduate one-year diploma and an online master of science in circular economy leadership for the built environment (GMIT, 2021[14]). With EPA funding, GMIT has partnered with Regional Waste Management Planning Offices (RWMPOs) to organise training for local authority staff on the circular built environment and construction and demolition waste.

The main barriers faced by knowledge institutions and universities are related to the fragmentation of research activities, the lack of collaboration between policy makers and academia, and difficulties in applying for research and innovation grants. First, because the circular economy is a new and interdisciplinary field of interest for many research departments, obtaining timely and precise information on previous, current and future research projects on the circular economy is challenging. There are also missing links between academia and policy makers, which are needed to ensure that research results are relevant and practical, and that they adequately feed into policy making. Finally, at the operational level, many universities share difficulties in applying to national and international research and innovation grants, as this often requires significant human resources and capacity.

Polices: Identifying sectors holding potential for the circular economy

The following section presents an overview of the three economic sectors with the highest potential for Ireland's transition to a circular economy – waste, the built environment and food systems – based on the OECD virtual missions to Ireland and the socio-economic trends of the country (see Chapter 1).

The circular economy is relevant to all economic sectors but some have higher potential than others. Making a sector circular implies rethinking value chains and production and consumption processes. Circularity implies that waste or by-products from one production process can be used as input for another, within and across sectors. The circular economy aims to: make products last longer through better design; create goods using secondary and reusable materials and renewable energy, while reducing atmospheric emissions; produce and distribute products locally and consume them consciously and sustainably; and transform waste into resources (OECD, 2020[2]).

The identification of priority sectors for action (see Box 3.1) is often the result of metabolism analyses that identify material flows, quantity, imports and exports. While the DECC has not yet carried out a metabolism analysis,[1] the Waste Action Plan for a Circular Economy (WAPCE) and the Whole of Government Circular Economy Strategy (hereafter "the Strategy") identify several priority sectors for establishing sectoral roadmaps, including the built environment (construction) and agri-food, as well as transport, procurement and consumer goods. The sectors analysed in this chapter are by no means exhaustive, as many other sectors can contribute to the circular economy transition in Ireland, but it provides an overview of sectors and activities with high potential. This is key to signal existing interest from "do-ers" to transition from a linear to a circular economy, in a shared responsibility across levels of government, to develop coherent circular economy policies.

Box 3.1. Priority areas identified in circular economy strategies

Priority areas can be established by sector or can be transversal in nature, for example:

- Colombia has six lines of action in its 2019 National Strategy for the Circular Economy based on metabolism analyses: i) flow of industrial materials and mass consumption products; ii) flow of packaging materials; iii) flow of biomass; iv) energy sources and flows; v) flow of water; and vi) flow of construction materials.
- The Circular Economy in the Netherlands by 2050 programme is based on five priorities: biomass and food; plastics; manufacturing industry; construction sector and consumer goods.
- For the city of Paris, the 1st roadmap adopted in 2017 encompasses 15 actions for: planning and construction; reduction, reuse, repair; support for actors; public procurement and responsible consumption. The 2nd roadmap was adopted in November 2018. This new roadmap defined 15 actions organised into 5 new themes: exemplary administration; culture; events; sustainable consumption and education.
- The Amsterdam Circular 2020-2025 focuses on three value chains to shape the circular economy actions in the city: food and organic waste streams; consumer goods; and the built environment.
- The city of Rotterdam, Netherlands, launched the Rotterdam Circularity Programme 2019-2023, focusing on four streams: agro-food and green streams; construction; consumer products (e.g. single-use plastics) and healthcare.

Source: OECD (2020[2]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en.

Waste and resources management

The circular economy in the waste sector requires both upstream and downstream action to prevent waste generation and transform waste into resources. A circular waste management system requires, first and foremost: the prevention of waste; the ability to prepare products for reuse; the ability to recycle materials that cannot be reused; and, as a last resort, recovering and landfilling waste. Waste can be prevented by ensuring that products are made to last and that they can be prepared for reuse, repaired or recycled easily. This can be done by mandating ecodesign at all stages of product life-cycles and by incentivising reuse and repair over the purchase of new products. In a circular system, the use of secondary materials for the production of goods should be incentivised and such materials should satisfy a significant percentage of material demand. A circular waste system also requires the development and commercialisation of technology to identify, sort and deliver high-quality raw material, where data connect products with waste handling (OECD, 2020[2]).

The first step towards circular waste management is to prevent waste generation by keeping resources in use for as long as possible. This starts with ensuring that products are built to last by promoting or mandating ecodesign across the entire product life cycle. The only current legislation related to ecodesign in Ireland is the EU Ecodesign Directive on energy-related products (Directive 2009/125/EC). The directive aims to improve the energy efficiency of energy-related products on the market by setting energy efficiency standards, incentivising the design of more energy-efficient products and allowing consumers to compare the performance of different products. The directive is currently limited to energy-related products and does not cover other parts of the life cycle process (e.g. production) or product dimensions (i.e. materials used for production). However, the European Commission's (EC) forthcoming Sustainable Product Initiative will revise the Ecodesign Directive and propose additional legislative measures to make products more

durable, reusable, repairable, recyclable, and energy-efficient (EC, 2022[15]). The EC is also planning other initiatives to improve the reparability and extend the useful life of products, including legislation on the right to repair and design requirements for electronics, among others (European Parliament, 2022[16]).

Ireland's National Waste Prevention Programme (NWPP) supports national-level strategic programmes to prevent waste. As part of the WAPCE, the EPA-led and DECC-funded NWPP has become Ireland's Circular Economy Programme (2021-2027), shifting the focus from waste prevention to a more holistic view of the circular economy. It delivers waste prevention and circular economy programmes through partnerships across a wide range of stakeholders, such as businesses, local authorities, knowledge institutions and local communities, and provides information and tools to citizens and policy makers to prevent waste in food, construction and plastics, amongst others. Many government-led circular economy initiatives are part of the NWPP (see Chapter 2). The National Waste Prevention Committee provides strategic and technical oversight for the implementation of the programme. The committee includes members from governmental, non-governmental, business and sectoral interest groups.

Extended producer responsibility (EPR) schemes also play an important role in designing out waste. These collective schemes make producers financially or organisationally responsible for collecting or taking back used goods, and for sorting and treating for their eventual recycling. Existing EPR schemes in Ireland cover WEEE, batteries, packaging, end-of-life vehicles, tyres and farm plastics. Producer Responsibility Organisations (PROs) such as Repak also raise awareness and build capacity among members and citizens, in this instance, on making packaging more recyclable and reducing packaging waste. It does so through a range of initiatives, such as a Plastic Packaging Recycling Strategy 2018-2030, a Plastic Pledge for members, a packaging design guide for recycling and a call to action to citizens to reduce, reuse and recycle (Team Green) (Repak, 2022[17]). The Single-use Plastics Directive (2019/904/EC), which targets items that account for 70% of EU marine litter, has been transposed into Irish law and extends EPR schemes to tobacco products, wet wipes, balloons and fishing gear containing plastic. It also bans many single-use items[2] (Box 3.2). The Department of Housing, Local Government and Heritage (DHLGH) aims to eliminate beach litter from these items by 2023. The DECC aims to end self-compliance as an option under EPR, enabling mandatory EPR for all packaging producers before the 2024 EU deadline. Packaging producers will be liable to pay eco-modulated fees, meaning that composite packaging and over-packaging will become significantly more expensive than recyclable packaging, and fees are set to cover at least 80% of the costs associated with waste management of the amount of packaging they place on the market. This should incentivise manufacturers to use packaging that is easier to recycle, which should in turn drive an increase in recycling rates.

Other measures targeted towards consumers in the WAPCE should also help to limit waste generation, particularly from single-use plastics. Plastics account for 20% of waste in household residual and recycling bins and is a growing waste stream (EPA, 2020[18]). As part of the Single-use Plastics Directive, the WAPCE foresees the implementation of deposit return schemes (DRS) for aluminium cans and plastic bottles, in collaboration with the food and drink industries, retailers, waste collectors[3] and treatment facilities, as well as counterparts in Northern Ireland. The WAPCE also highlights the need to raise awareness on the benefits of reusable containers and anticipates working with retailers to encourage the provision of refill options. The "latte levy" (see sub-section on economy and finance in Chapter 2), a ban on single-use cups and offering discounts to customers using reusable ones, should also limit waste generated by single-use cups. Similar measures including levies, bans and working with relevant stakeholders such as industry associations are also foreseen for cold drinks and food containers. In general, the WAPCE will introduce different measures for different waste streams, including targets (e.g. a 65% collection target for WEEE), stakeholder engagement (e.g. the creation of a textile action group to increase circularity in textiles), bans (e.g. of bulky household waste from landfill) and levies (e.g. on "fast fashion").

Box 3.2. A European strategy for plastics in a circular economy

Plastic waste has been growing rapidly in Europe over the past 50 years. Since the 1960s, the production of plastics worldwide increased 20-fold, reaching 322 million tonnes in 2015, and is expected to double by 2040. A total of 25.8 million tonnes of plastic waste are produced in Europe annually, while less than 30% is collected for recycling.

Demand for recycled plastics accounted for only around 6% of plastics demand in 2018. Globally, plastics production and the incineration of plastic waste give rise to approximately 400 million tonnes of CO_2 per year.

A European Strategy for Plastics in a Circular Economy, adopted by the European Commission in 2018, aims to achieve a recycling rate of 55% for plastic packaging waste by 2030. The strategy includes the following measures: to improve the economics and quality of plastics recycling; curb plastic waste and littering; drive investment and innovation for circular solutions by promoting investment and innovation in the value chain; and harness global action through co-operation and trade, among others.

In May 2018, the EC proposed new EU-wide rules to target the single-use plastic products most often found on Europe's beaches and seas: cotton buds; cutlery, plates, straws and stirrers; sticks for balloons and balloons; food containers; cups for beverages; beverage containers; cigarette butts; bags; crisp packets/sweet wrappers; and wet wipes and sanitary items.

Source: OECD (2020[2]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en.

Discarded products that can be reused should be collected and prepared for reuse or remanufacturing. Several small-scale reuse businesses and social enterprises exist in Ireland, including the Rediscovery Centre and ReCreate Ireland, which reuses unwanted materials as art and educational supplies (ReCreate Ireland, 2021[19]). The DECC will introduce a national reuse target and plans to advocate for the development and implementation of targets for reuse at the EU level, while the EPA's forthcoming Circular Economy Programme will expand support for reuse, repair and sharing already provided to some extent by the NWPP. Currently, the only activity formally registered as "preparation for reuse"[4] is the refurbishment and sale of WEEE that has been taken back through EPR schemes, but there are no companies in Ireland registered for preparation for reuse. This results in the recycling, rather than reuse, of all of the WEEE collected via take-back schemes or at civic amenity sites.

Recycling should be favoured over recovery or landfill for waste that cannot be prevented, repaired or reused. However, recycling rates in Ireland have plateaued over the past decade (see Chapter 1) due to a range of factors, including the contamination of waste streams, insufficient participation in waste collection services, and differences in waste collection practices across different geographical areas and collection service operators (EPA, 2020[20]; DECC, 2020[21]). To tackle the issue of illegal dumping, local authorities have introduced waste by-laws mandating all households, apartments and commercial premises to subscribe to an authorised waste collection service or to prove alternative means they use to dispose of their waste. Around 16% of households do not avail of a collection service; of those 16%, 4% use a pre-paid bag collection service, 8% take it to a recycling centre and 1% take it to their workplace (CSO, 2016 in EPA (2020[20])). However, not all waste reception facilities (e.g. civic amenity sites and bring banks) allow for the separation of residual from recycling and organic waste. Finally, waste collection service operators are not obliged to provide three separate bins for waste collection (residual, recyclable and organic) in agglomerations of under 500 inhabitants. Glass and textiles are collected at bring banks.

Waste separation is a priority of the WAPCE. Bin colours are foreseen to be standardised nationwide under the WAPCE and the provision of an organic waste bin will be mandated as part of a waste collection service for all households; 68% of households availing of a collection service already had one in 2020.[5] The WAPCE highlights the urgency of enforcing correct separation to reduce contamination and increase recycling, particularly for commercial waste: the DECC plans to raise awareness via a campaign, enforcement actions requiring separate bins and incentivised charging in this sector. The WAPCE also anticipates a review of the incentivised charging regime and introducing penalties for those failing to separate waste correctly. Waste collectors currently tend to charge customers per bin lift, by weight or with other waste charging structures but they cannot charge a flat rate since 2018 (DECC, 2021[22]). Weight-based charging is not yet mandatory but could easily be rolled out for household waste given that every household bin in Ireland is already weighed, recorded and reported via radio-frequency identification chips. The DECC also encourages soft regulation such as the rollout and adoption of MyWaste.ie package labelling, which informs consumers whether or not an item of packaging can be recycled or not, or to check on mywaste.ie. On the collection side, waste collection service operators will be required to achieve municipal waste recycling targets as a condition for waste collection permits, to incentivise the industry to work towards recycling targets in light of the current market structure (Box 3.3). To this end, certain waste companies foresee "waste mining", i.e. extracting recyclable resources from residual waste, as a lever for increasing recycling rates. However, implementing waste prevention measures both upstream (e.g. enforcing ecodesign) and downstream (e.g. setting minimum recyclate contents in packaging) is needed to ensure that the burden of these targets does not disproportionately fall on waste collection service operators and that waste prevention and the circular economy is a shared responsibility across the government, households, businesses and the waste management industry.

End-of-waste and by-product regulatory processes also have a particularly important role to play in keeping resources in use, particularly in the construction sector, as recognised by the WAPCE. Both processes fall under the 2008 EU Waste Framework Directive. Under the directive's by-product provision, businesses deciding that a substance produced by them is a by-product rather than waste notify the EPA, which takes the final decision (EPA, 2020[20]). End-of-waste processes enable material recovered or recycled from waste to cease to be considered as waste. Businesses wishing to do so must submit an application to the EPA, which makes case-by-case decisions in the absence of EU-level criteria.[6] However, businesses going through these notification and application processes with the EPA face considerable delays, which does not provide an incentive for keeping resources in use. These delays are recognised by the WAPCE, which anticipates a series of measures to compress them. These measures notably include considering delegating responsibilities for assessing application and notifications to local authorities and charging fees. The EPA has published draft guidance on by-product notifications and end-of-waste applications to help speed up the process (EPA, 2021[23]; 2021[24]).

Box 3.3. Municipal waste management in Ireland

Municipal waste management in Ireland has undergone significant change since the 1996 Waste Management Act, which provides the legal basis for waste management in the country. Since the act's entry into force, private companies have been allowed to compete with local authorities in the waste market and have gradually become the main providers of waste collection and treatment services in Ireland. As such, the role of local authorities has shifted from the direct provision of waste collection and treatment services to the development and enforcement of waste policies and planning.

A wide range of stakeholders is involved in the Irish waste sector. The DECC is responsible for primary and secondary waste legislation, including the transposition of EU waste legislation into Irish law, and ultimately defines the country's legal framework for waste management. Regional Waste Management Planning Offices (RWMPOs) are responsible for waste planning and implementation via five- to six-year

waste management plans. Waste operators require permits from the National Waste Collection Permit Office (NWCPO) at Offaly County Council. The EPA is responsible for: regulation and compliance; collecting, monitoring and disseminating data, information and knowledge; and enforcing waste regulation. It is also the licensing authority for waste-related activities including landfills, transfer stations, hazardous waste disposal, ship recycling and any waste disposal and recovery activities above a certain threshold depending on the waste category, while local authorities are responsible for licensing facilities below the determined threshold. Local authorities are also responsible for the enforcement of waste collection permits, producer responsibility initiatives and litter. Around 150 companies are involved in non-hazardous waste management in Ireland, of which around 40 are involved in the collection of household and commercial waste. With 41 member companies accounting for 80% of household waste collected, the Irish Waste Management Association (IWMA) is the representative body for private sector waste management companies in Ireland. Certain organisations also contribute to the recycling of specific waste streams, such as the Irish Farm Film Producers Group CLG (IFFPG), an approved non-profit farm plastics recycling compliance scheme that recycles up to 30 000 tonnes of farm plastics yearly and is primarily funded by a recycling levy paid by members (i.e. companies selling farm film products).

Municipal waste collection in OECD countries tends to follow one of the three following approaches:

- **Competitive tendering**, where waste collection and transport services for one (or more) municipal areas may be contracted to commercial providers. This approach is common in OECD countries, including Colombia, Estonia and Poland.
- **In-house service delivery,** where municipal governments directly deliver waste management services (e.g. Israel) or delegate collection, transport and treatment to a company owned by the municipality or jointly owned by many municipalities through an exclusive contract (e.g. some municipalities in Norway).
- **Side-by-side collection**, where individual households are responsible for arranging the collection and transport of their waste, resulting in direct contracting between households and waste collectors so that multiple companies may be operating “side by side” in the same municipality. This approach was in place in Poland until 2013 and is currently in place in Ireland.

Ireland’s side-by-side collection system is increasingly rare among OECD countries. It was the norm in Poland until 2011, where municipalities were not directly responsible for household waste collection. However, the presence of multiple waste collection companies led to increased traffic, air and noise pollution, and illegal dumping was made relatively easy due to the weak role of municipalities and the possibility of free-riding by households. Since 2011, Polish municipalities have been responsible for competitive tendering of municipal waste collection services and early results suggested that service coverage and the separate collection of waste had increased.

The Competition and Consumer Protection Commission (CPCC) 2018 review of the household waste collection market highlighted that the market was highly concentrated in some areas, giving operators “considerable” market power. The “side-by-side” system was expected to favour competition, thus leading to positive outcomes for households. However, the report’s analysis suggests that competition levels at the local authority level are in fact weak, and potentially even more so at the route level, as waste collectors operating within one local authority may not all serve the same routes. The data highlights that 18-25% of Irish households do not have a choice of operator and that 20 operators serve 90% of households with a collection service. The report further highlights that competition may not lead to the most efficient outcomes in the waste collection market, which tends to be characterised by economies of scale, high fixed costs and large cost advantage for a single operator. As such, it may be more economically efficient for one operator to supply the market.

The WAPCE's Waste Advisory Group concluded that the professionalisation of the sector had been a key driver of better overall performance and that the current market structure had some advantages in terms of value for money and flexibility, but that it offered relatively lower control for regulators regarding the achievement of guaranteed performance levels. Despite recognising improvements (e.g. the introduction of Customer Charters), the Waste Advisory Group also highlighted the sometimes-weak position of consumers due to the absence of a dedicated, statutory complaints procedure and the difficulty in comparing pricing structures. As a result, the WAPCE seeks to improve consumer protection and customer service by monitoring the market, establishing a formal complaints procedure, strengthening and enforcing customer service charters and standardising the provision of clear pricing plans, in line with other Irish utilities.

Source: OECD virtual mission to Ireland, 10-12 March 2020; OECD virtual mission to Ireland, 6-9 July 2021; DECC (2020[21]), *Waste Action Plan for a Circular Economy*, https://www.gov.ie/en/publication/4221c-waste-action-plan-for-a-circular-economy/ (accessed on 19 July 2021); OECD (2019[25]), *Waste Management and the Circular Economy in Selected OECD Countries: Evidence from Environmental Performance Reviews*, https://dx.doi.org/10.1787/9789264309395-en; CCPC (2018[26]), *The Operation of the Household Waste Collection Market*, https://www.ccpc.ie/business/wp-content/uploads/sites/3/2018/10/The-Operation-of-the-Household-Waste-Collection-Market.pdf (accessed on 3 December 2021).

The WAPCE is a step in the right direction towards a more circular waste sector in Ireland but regulatory, organisational, financial and data-related challenges remain. The effective and coherent implementation of WAPCE measures into Irish law will largely depend on the 2021 Circular Economy Bill, which will amend the Waste Management Act 1996 among others. Current delays in regulatory processes for end-of-waste and by-products do not favour the prevention, recovery and recycling of materials. Additionally, licensing delays for waste treatment and recycling capacity are significant, disincentivising private investment. On the other hand, roles and responsibilities in Irish waste management are fragmented, leading to regulatory gaps and a lack of public sector oversight and control over private waste collection and treatment. Virgin materials (especially plastics) are often significantly cheaper than secondary and recycled materials, creating an unbalanced playing field that favours linear rather than circular materials, products and value chains. Finally, beyond the EPA's reporting of municipal solid waste (MSW), data and information on total (not just municipal) waste streams are poorly disseminated at the national level. Regionally and locally disaggregated data on municipal waste is scarce and the time-lapse for waste data publication does not allow real-time, data-driven policy making. These gaps are further discussed in Chapter 3.

Built environment

The built environment consists of buildings as well as physical infrastructures such as roads and dams. Demographic and economic growth drove a strong and sustained increase in construction activity[7] in Ireland between 2013 and 2019 which, in turn, contributed to increasing greenhouse gas (GHG) emissions. During that period, new constructions in Ireland grew eight times faster than the EU27 average on a year-on-year basis. In 2018, residential and commercial buildings accounted for 15% of GHG emissions in Ireland and construction waste accounted for 15% of total waste (Eurostat, 2021[27]). However, the pandemic led to a sharper drop in construction in Ireland than in the rest of the EU: construction in Ireland dropped by 9.3% in 2020, compared to 5% in the EU (Eurostat, 2021[28]).

The National Development Plan, which foresees the construction of 30 000 new homes annually until 2040, includes incentives to address the existing vacant stock of buildings, such as a new tax to activate vacant land for residential purposes (DPER, 2019[29]). One of the four pathways established by Housing for All, Ireland's new housing plan, seeks to address vacancy and the efficient use of existing stock (DHLGH, 2021[30]). The EUR 4.5 billion investment in water infrastructure expected for the construction of new homes by 2025 is another opportunity to embed circularity in Ireland's built environment, improving resource efficiency across the life cycle of new builds.

The built environment is included in several cross-sectoral documents and plans in Ireland, notably in green public procurement (GPP) and the Climate Action Plan (CAP). To minimise the negative impacts of the design, construction and management of office buildings in Ireland, Ireland has committed to implementing GPP in all tenders using public funds by 2023, including in the built environment. GPP criteria for the built environment address the key phases of the construction life cycle: i) preliminary conditions for the design and performance of buildings; ii) construction and maintenance; iii) operation; and iv) demolition. The EPA's Green Procurement Guidance for the Public Sector provides guidance and a toolkit for public procurers to include green criteria in key sectors for the circular economy, including office buildings (EPA, 2021[31]). Moreover, Ireland's CAP sets out specific actions and minimum requirements in terms of energy use in buildings, such as support schemes for renewable heating, the removal of fossil-fuel heating systems and the promotion of energy labels.

The Irish building sector is exploring how to shift towards a more resource-efficient built environment as a means of contributing to the European Green Deal and carbon neutrality by 2050. The Irish Green Building Council[8] (IGBC) and nine European counterparts[9] are part of the #BuildingLife initiative led by the World Green Building Council, which seeks to galvanise climate action in the built environment through national and regional decarbonisation roadmaps, which should be made public in 2022 (World Green Building Council, 2021[32]). The roadmaps include private and public sector action deemed necessary by the industry to tackle the life cycle impact of buildings and reduce virgin material use (IGBC, 2021[33]). The EC's level(s) assessment and reporting framework, launched in 2018, acts as a common language to support the sustainable performance of buildings. This tool fosters a life cycle approach to buildings and delivers a robust framework to measure and support improvement from design to end of life for both residential and office buildings.

Several capacity-building initiatives to drive circularity in the built environment are in place. Through its Learning Hub, the IGBC shares information in the form of webinars and reading material on sustainability in the built environment, including circular economy, with its members (IGBC, 2021[34]). Knowledge institutions and universities also play an essential role in building the skills and capacities that construction professionals require to drive circularity in the built environment, notably the Galway-Mayo Institute of Technology (GMIT) (see the sub-section on knowledge institutions above).

Existing tools and guidance can also foster circularity in construction. Under the NWPP, the EPA has updated guidelines for the preparation of Resource and Waste Management Plans for construction and demolition projects (EPA, 2021[35]), which the EPA currently recommends planning authorities mandate for all projects. The IGBC's Environmental Product Declarations (EPD), which provide verified information on the environmental life cycle impact of construction products, allow manufacturers of construction products to share information on the environmental impacts of their products on the EPD platform, in compliance with Ireland's product regulations (IGBC, 2021[36]). Funding from Enterprise Ireland, the government agency responsible for the development of Irish businesses in international markets, is available to assist companies seeking this declaration.

The circular way of building consists of rethinking upstream and downstream processes to minimise waste production and maximise resource use. It also implies new forms of collaboration among designers, constructors, contractors, real estate investors, suppliers of low- and high-tech building materials and owners, while looking at the life cycle from construction to end of life. Key phases can be identified as follows: planning, design, construction, operation and end of current life (OECD, 2020[2]).

- **Planning** in a circular way implies considering the entire life cycle of the asset, including alternative use through repurposing and reassembly. The National Planning Framework (NPF), Ireland's highest-level statutory land use plan, places a new policy emphasis on renewing and developing existing settlements rather than continuing expansion and sprawl. In addition, the 2020 Programme for Government, Our Shared Future, commits to implementing a Town Centre First policy that aims to regenerate town centres by using existing buildings and unused land for new developments, as

well as promoting residential occupancy in rural towns and villages (Department of the Taoiseach, 2020[37]). Increasing the intensity of existing floor space can significantly contribute to decarbonisation in a circular approach to construction, as GHG savings from more intensive floor space use are significantly higher than those from repair, reuse and recycling in G7 countries (International Resource Panel, 2020[38]).

- The choice of **materials** for construction has significant potential for circularity in the built environment. For instance, the three cement manufacturers in Ireland represented by industry body Cement Manufacturers Ireland combine energy recovery from municipal solid waste and recycling of the inorganic components of solid recovered fuels inside cement kilns, also known as co-processing. This diverts waste from landfill, avoids the use of virgin fossil fuels and allows inorganic ash components to feed into the final cement product. Currently, Cement Manufacturers Ireland members use 250 000 tonnes of alternative fuels each year, most of which is Solid Recovered Fuel, which amounts to an average of 36% of fossil fuels in cement production being replaced by alternative fuels each year. In Paris, France, besides meeting all mandatory requirements established by the French High Environmental Quality Standard (NF HQE) Base, a certification for the construction sector, construction projects should achieve at least 40% of the items established in a "circular economy profile" to be considered circular (e.g. inclusion of a waste management plan, use of recycled materials, development of life-analysis calculations, eco-certification of wood, considering deconstruction processes, establishing synergies with local actors in the surrounding areas, among others) (OECD, 2020[2]).
- The way in which a building is **operated** has a direct impact on water and energy efficiency. For example, Google Dublin is a leader for Google European offices with five Leadership in Energy and Environmental Design (LEED)-certified buildings. The LEED tool evaluates the facility's environmental impact, water consumption, energy efficiency, materials used, interior environmental quality and innovation (Google, n.d.[39]). Transport Infrastructure Ireland (TII) is the first national government agency to develop a Circular Economy Plan, with a view to embedding circular principles in its operations. As the state agency responsible for road and public transport infrastructure in Ireland, TII is involved in the consumption and transport of bulk construction materials in Ireland, both through its own procurement and as the author of standards and specifications used in the Irish construction industry. TII has taken a systems-mapping approach to identify actions, including updates to design and materials standards, industry and supply chain engagement and standard circular economy plans for TII projects and programmes. Three circular pilot projects are already underway.
- When demolition cannot be avoided, the **end life** of a building should create a new life for the waste material produced. Three levels of circularity can be identified: i) repurposing existing assets, components and materials with no major transformations and in the same location; ii) reusing existing assets for the same purpose, but in a different location; and iii) reusing components and materials of existing assets, in the same and in a different location. For example, Limerick's Opera Site project, the biggest urban development project in Limerick, benefitted from a pre-demolition audit for resource assessment to predetermine and quantify onsite materials that could be reused or recycled in the new building and other local projects. Certain components such as old bricks and stone were made available for other construction projects (Limerick 2030, 2018[40]). By-product notifications and end-of-waste applications also play an important role in incentivising waste prevention, the recovery and recycling of as many materials as possible (see previous section).

Four main barriers currently impede the shift towards a circular built environment in Ireland. First, there is limited awareness and knowledge of circular processes, technologies and materials among businesses in the sector. While existing plans and programmes focus on sustainability and resource efficiency, there is little dissemination of knowledge on circular practices in construction. Second, current legislation and regulation do not incentivise circular practices. For instance, under the EU Waste Framework Directive,

site managers must notify where waste and by-products go but there is no procedure to notify direct reuse, which creates a challenge for onsite operations staff and ultimately hinders the reuse of materials on construction and demolition sites. As in the waste sector (see previous section), regulatory delays are also an issue: for instance, the length of regulatory approvals to allow for an increased range or quantity of alternative fuels to replace fossil fuels is currently the main barrier to scaling up co-processing in cement kilns. Third, the playing field is tilted in favour of primary construction materials rather than recycled materials, which are often more expensive and less readily available. Moreover, the National Standards Association of Ireland's accreditation process for secondary and recycled materials can be time-consuming, potentially discouraging the development of innovative and circular construction materials. Furthermore, there is no incentive scheme to support the use of secondary and recycled materials or their better sorting at the construction site, their reuse and recycling in Ireland. As such, circular economy techniques and processes often imply significant additional costs and technical challenges for companies, especially SMEs. Finally, public procurement criteria in the built environment tend to favour proposals with the lowest price and shortest construction period, rather than sustainable and circular proposals and tend to consider only upfront capital costs rather than the operation and maintenance and environmental costs across the entire construction life cycle.

Food systems

Circular food systems are based on regenerative food production and the elimination of food waste (Ellen MacArthur Foundation, 2021[41]). This implies taking a systemic approach along the value chain from production to processing, distribution and consumption, to close material loops and eliminate waste by transforming it into resources. Along the circular food production cycle, external inputs are reduced; production is adapted to local contexts; negative externalities such as soil depletion and water pollution are avoided, and natural capital is restored. The section below focuses on various components of the food system, from agriculture to food waste, and identifies opportunities for applying circular economy principles.

Policy drivers for the circular economy in agriculture

As one of Ireland's most significant economic activities but also one the most polluting, agriculture should be a cornerstone of Ireland's circular transition. The sector accounted for 7% of total employment and 9.5% of merchandise exports in Ireland in 2019 (see Chapter 1), and the country's 1 448 km of coastline and large territorial seas confer it a natural advantage in the seafood industry. The Irish agricultural sector is characterised by a large number (137 500) of predominantly small family farms covering over 67% of Ireland's territory (EPA, 2020[20]).

Agriculture is the main source of GHG emissions in Ireland (around one-third), mostly due to the prevalence of beef production, which accounted for 52.7% of Irish farms. Agriculture is also a significant driver of water pollution (see Chapter 1). A number of programmes seek to prevent pollution at its source on the farming, namely:

- The Agricultural Sustainability Support and Advisory Programme (ASSAP) aims to reduce water pollution from farms at the source by undertaking farm assessments and advising farmers on what measures to take to address water quality issues (EPA, 2020[20]). It has 20 Teagasc advisors funded by the Department for Agriculture, Food and the Marine (DAFM) and DHLGH, and 10 dairy advisors funded by Dairy Sustainability Ireland. The advisors focus on yards, lands and nutrient management planning. Up to 5 000 farmers within 190 prioritised catchment areas for action will be supported by this programme.
- The DAFM's Green, Low-Carbon, Agri-Environment Scheme (GLAS) provides payments to farmers for managing land in a way that is beneficial to nature. This includes tackling climate change, preserving biodiversity, protecting habitats and promoting environmentally-friendly

farming. GLAS Plus provides further payments to farmers taking strong environmental action and commitments on farms that contain habitats for endangered birds.

- Ireland's Nitrates Action Programme aims to prevent water pollution from agricultural sources and to improve water quality. Programme measures focus on livestock stocking densities and the storage and land spreading of livestock manure. Under enforcing regulations, local authorities and the DAFM (under an agreement with the DHGLH) carry out around 3 500 and 1 600 farm inspections respectively.

Ireland anticipates ambitious GHG emission reductions in the agricultural sector but the adoption of circular and regenerative practices in the sector are absent from sectoral roadmaps. Ireland, along with New Zealand, is the only country to have set a legally binding policy target to mitigate GHG emissions from agriculture in its Nationally Determined Contribution to the Paris Agreement (OECD, 2021[42]). Ireland's latest Climate Action Plan (2021) suggests a 22-30% reduction in GHG emissions from agriculture by 2030, from 23 megatonnes of carbon dioxide ($MtCO_2$) in 2018 to 16-18 $MtCO_2$ in 2030 (DECC, 2021[43]). Key measures foreseen in the 2021 Climate Action Plan relate to increasing farming GHG efficiency and diversifying farm activities through afforestation, forest management and bioenergy (notably biomethane) among others. Ag Climatise, the Teagasc-led[10] roadmap, includes the promotion of the development of a sustainable circular bioeconomy as one of the 29 actions for the agri-food sector, which should be done by "addressing issues such as pasture valorisation, food and organic waste and losses, by-product valorisation, nutrient recycling, water recycling and recycling of plastics" (Teagasc, 2021[44]). These roadmaps see the circular economy as a tool to valorise and reduce waste rather than a new model for food production, reflecting the analytical rather than systemic approach taken by stakeholders in defining courses of action towards carbon neutrality.

In addition to reducing the environmental impact of conventional agriculture, the shift to a circular agricultural model would bring economic and climate co-benefits, such as generating new income streams for farmers (e.g. by selling waste to be reused as a resource in another process). As well as reducing the climate impact of farming operations, circular agriculture regenerates soils and improves their health, enhancing the capacity of soils to sequester carbon and act as a carbon sink (EPA, 2020[20]). Improving soil health also reduces the need for external, virgin inputs such as synthetic fertilisers. Some circular practices are already in place or being scaled up in the agricultural sector. For instance, nutrients recovered from sewage sludge can be used as fertiliser on farms, thus contributing to closing nutrient loops; 89% of the 58 630 tonnes of sewage sludge produced by wastewater treatment plants was used as fertiliser and 10% as compost for agriculture in 2019. Ringsend water treatment plant is the first in the country to have a phosphorus recovery facility; phosphorus recovered from sewage sludge can be used on farms to increase soil productivity[11] (Irish Water, n.d.[45]).

A number of farming sustainability programmes incorporate resource efficiency as a tool to mitigate environmental damage. For example, the EPA and the Irish Farmers' Association's Smart Farming programme, a voluntary resource efficiency programme, works with farmers to improve farm returns while taking action across eight key areas, including one on inputs (e.g. feeds and fertilisers) and waste (SmartFarming, 2021[46]). Origin Green, launched in 2012 and led by Bord Bia, the Irish Food Board, takes a systemic approach by addressing the entire value chain, from farmers to fishers to manufacturers and retailers (Origin Green, 2021[47]). The programme enables Ireland's food industry to set and achieve measurable sustainability targets that are independently assessed and verified. The audit criteria cover GHGs, biodiversity, water measures, energy efficiency, soil management, socio-economic factors and quality assurance. The programme's large reach, covering 53 000 of Ireland's 140 000 farms and 324 food and beverage companies, has allowed the programme to raise awareness around sustainability in the Irish food system.

The agri-food industry is starting to consider the circular economy as a tool to make more efficient use of resources, yet without grasping the potential of a fully circular agricultural sector. Under the auspices of the DAFM, agricultural stakeholders in Ireland draw up ten-year strategic plans defining a common vision for the sector, which is revised every five years. While these strategies are voluntary (i.e. with non-binding targets), they seek to foster buy-in through strong industry participation and co-creation. Growth took centre stage in all past strategies, such as Food Wise 2025, which aimed to increase the value of primary agricultural production by 65% and to increase the value of agri-food exports by 85%. Food Vision 2030 breaks from this tradition by adopting a "food systems approach" that acknowledges the link between food, climate, the environment and health (DAFM, 2021[48]). One of the strategy's goals is to "enhance the agri-food sector in the circular regenerative economy", highlighting the sector's willingness to take certain actions based on circular principles, without considering or understanding the circular economy as a model for food production.

As a strategic priority for the government of Ireland, the bioeconomy is an opportunity to mainstream circular principles within Irish agricultural policy. The Department of the Taoiseach, the Prime Minister of Ireland, published the first National Policy Statement on the Bioeconomy in March 2018 as part of Project Ireland 2040. According to the statement, the bioeconomy should "promote circularity through solutions and innovations that reuse and recycle materials, maximising resource efficiency through the use of unavoidable wastes and environmental sustainability" (Government of Ireland, 2018[49]). The Bioeconomy Implementation Group, co-chaired by the DECC and the DAFM, published its first and only implementation report in 2019 and organised the first National Bioeconomy Forum in July 2021. The organisation of two Bioeconomy Ireland Weeks in 2020 and 2021 respectively has showcased circular bioeconomy projects (e.g. a multi-product biorefinery) and raised awareness on the circular and bioeconomy among farmers. Further integration between bioeconomy and circular economy policy could catalyse action and synergies on both fronts.

The EU Circular Economy Action Plan (CEAP) may increasingly act as a driver for circular agriculture in Ireland, as "Food, water and nutrients" is one of its seven key product value chains (EC, 2020[5]). Relevant actions for the agri-food sector include the Single-use Plastics Directive, the new Water Reuse Regulation, which encourages water reuse in agriculture, and the forthcoming Integrated Nutrient Management Plan, which aims to reduce nutrient losses by at least 50% while ensuring that there is no deterioration in soil fertility. The EC is also considering reviewing directives on wastewater treatment and sewage sludge. Other EU countries and regions are incorporating the circular economy into their agricultural policies (Box 3.4). Additionally, funding from the agricultural European Innovation Partnership (EIP-AGRI) has supported innovation within the circular bioeconomy, such as Biorefinery Glas, the first demonstration of small-scale biorefinery in Ireland (EIP-AGRI, 2022[50]).

Box 3.4. Circular economy in regional and national agricultural policies

The OECD (2021[42]) identifies several EU regions and member states mainstreaming the circular economy into agricultural policy frameworks:

- In the Flanders region of Belgium, the Flanders Circular partnership set out in 2020 to develop a circular work programme for the food chain. Guidelines of the work programme were defined in 2020 and implementation will begin in 2021. In addition, a bioeconomy policy plan was developed by the Flemish Department of Economy, Science and Innovation and the Department of Agriculture and Fisheries in 2020. This plan includes a series of actions ranging from stimulating research and innovation, guiding new collaborations between industry and agriculture, and accompanying policy measures (such as monitoring, international co-operation, training and education).

- The government of Estonia in 2020 included the circular bioeconomy in the new Estonian Agricultural and Fisheries Strategy 2030 as a horizontal priority, with the strategy implemented through the EU Common Agricultural Policy of the EU. Additionally, the government announced that EUR 23.8 million (USD 27.1 million) from the Recovery and Resilience Facility would be used for supporting the bioeconomy in Estonia.
- The Netherlands continued to develop its Circular Agriculture vision in 2020.
- In Portugal, the government introduced the National Strategy against Agricultural and Agribusiness Waste in September 2020 and also put into action the second phase of the Action Plan for the Circular Economy, targeting the revision of the waste management framework with a focus on the management and prevention of biowaste.

Source: Verbatim extracts from OECD (2021[42]), *Agricultural Policy Monitoring and Evaluation 2021: Addressing the Challenges Facing Food Systems*, https://doi.org/10.1787/2d810e01-en.

Food waste

Ireland was estimated to generate in the order of 1 million tonnes of food waste in 2018, equating to around 3.6 $MtCO_2$ equivalent, but there is significant uncertainty regarding food waste data estimates, particularly at the upper end of the value chain (EPA, 2021[51]). Organic waste accounted for 33% of waste going to commercial residual bins in 2018[12] (EPA, 2018[52]) despite the Waste Management (Food Waste) Regulations 2009 requiring food suppliers to separate food waste from other waste. Household food waste was estimated at around 255 000 tonnes in 2019, accounting for around 23% of total estimated food waste, although it should be noted that not all food waste is avoidable (e.g. vegetable peelings, used tea bags, etc.) (EPA, 2021[53]). Forthcoming EPA work should provide a better understanding of the scale of the avoidable/unavoidable or edible/inedible split of food waste.

Addressing food waste is the second part of the equation in a circular food system. Food waste should first and foremost be prevented. Unsold food that is fit for human consumption should be redistributed to people via food banks or food redistribution networks. Food unfit for human consumption should, as a priority, be reused as animal feed; then, if unsuitable for animal feed, be converted into energy and biofertiliser via anaerobic digestion or turned into compost for food production (EPA, 2021[51]).

The WAPCE and the Circular Economy Bill are driving action on food waste in Ireland by setting targets and making food waste a priority. The WAPCE establishes the target of a 50% reduction in food waste by 2030, in line with SDG 12.3. The DECC plans to make the provision of a brown bin for the separate collection of organic waste mandatory for all household waste collection services and to work with the DHLGH to change planning and tenancy laws to ensure that apartment blocks have infrastructure allowing food waste separation. The forthcoming Food Waste Prevention Roadmap, one of the WAPCE's commitments on food waste, is an important first step in gathering stakeholders that will work together to determine a series of actions to deliver this target and promote Ireland's transition to a circular economy. The dedicated heading for food waste in Ireland's Circular Economy Bill will place this roadmap on a statutory footing and, as such, ensure political continuity of government action on food waste.

A number of government-led programmes and initiatives are in place to tackle food waste in Ireland:

- The EPA's Food Waste Prevention Programme is implemented through the Circular Economy Programme. The programme delivers campaigns and supports targeting food waste in households, across the supply chain and in the hospitality sector, with a view to achieving the national target for a 50% reduction in food waste by 2030. It focuses on:

  - **Household food waste**: Awareness raising through stopfoodwaste.ie and application of behavioural insights to raise awareness of the environmental and social implications of wasted food.
  - **Supply chain and hospitality**: Initial actions are focused on the rollout of a standardised measurement methodology and developing tools and resources for upskilling for action on food waste prevention.
  - **Data and evidence**: Behavioural insight is a foundation of the programme, providing evidence and data to inform policy, behavioural change interventions and awareness campaigns, establish sectoral benchmarks and indicators, and monitor progress. The EPA held its 2021 Forum on Food Waste in November 2021, gathering key actors from across the food chain to "discuss how measuring food waste and addressing collaboration across the supply chain can provide insights on opportunities and challenges in relation to food loss and waste in Ireland" (EPA, 2021[54]).
- The EPA Food Waste Charter is a voluntary agreement introduced in 2017 to support engagement on food waste with the retail sector, using a set of general binding principles. Options for extending the charter are being considered to include other key sectors of the supply chain and revised to include specific measurement, reporting obligations and target-based reduction commitments.
- The DECC, EPA, RWMPOs, IWMA and Cré (Composting and Anaerobic Digestion Association of Ireland) are working together to improve the participation rate in the separate collection of food waste. This entails the delivery of a "brown bin starter pack" to all new customers and an initiative to roll out starter packs to households that have organic bins but do not use them effectively. The starter packs comprise a 7-litre kitchen caddy, 20 compostable bin liners and an information leaflet. Trials have shown that these starter packs are effective in improving biowaste separation: collectors have reported increased food waste tonnage and contamination has decreased in areas benefitting from a pilot project (MyWaste.ie, 2020[55]).

Initiatives to redistribute food have become increasingly established in Ireland over the past decade and their use has increased and become particularly relevant during the COVID-19 pandemic. The most prominent example is FoodCloud, a social enterprise established in 2012 that redistributes excess food from retailers, farmers and manufacturers to charities and community groups (FoodCloud, 2021[56]). FoodCloud hubs in Cork, Dublin and Galway co-operate with food industry partners to receive and manage their food surpluses. FoodCloud saw unprecedented demand for redistributed food during the COVID-19 pandemic and strengthened engagement with donors to increase redistribution through FoodCloud hubs by approximately 75% in 2020. Under the WAPCE, the DECC plans to look into potential regulatory and legal barriers to food donation and whether mandatory donation of edible food from retail outlets, as is the case in France (Box 3.5), would reduce food waste.

Box 3.5. Legislation preventing food waste in France

Two consecutive laws, promulgated in 2015 and 2016 respectively, made France the first country in the world to ban supermarkets from throwing away or destroying unsold products. The "Energy transition for green growth" law (*Loi n° 2015-992 du 17 août 2015 relative à la transition énergétique pour la croissance verte*), which includes "the fight against waste and the promotion of the circular economy: from product design to recycling", and the Law on Combating Food Waste (*Loi n° 2016-138 du 11 février 2016 relative à la lutte contre le gaspillage alimentaire*) are the two main instruments to reduce food waste in the country. The anti-waste law for a circular economy (*Loi n° 2020-105 du 10 février 2020 relative à la lutte contre le gaspillage et à l'économie circulaire*), approved by the French National Assembly in February 2020, prohibits the destruction of non-food unsold products and increases the

sanctions in case of non-compliance with the ban on food waste. For example, food distributors are obliged to propose a donation agreement to food aid organisations for the return of their unsold still-consumable food, when food stores are bigger than 400 m^2.

The law coming into force increased the amount of food collected by associations, from 36 000 tonnes in 2015 to 46 000 in 2017. The food is distributed by charities and food banks.

Source: OECD (2020[2]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en.

The government and businesses across the food value chain are taking steps towards more circularity in the food system but a holistic vision for a circular food system is lacking among stakeholders. Barriers relate to the fragmentation of roles and responsibilities, regulation and awareness and education. The DECC and EPA's focus on downstream food waste (from processing to distribution and retail) is poorly connected to Ireland's agricultural policy relating to upstream food loss, which is led by the DAFM and supported by Teagasc and the DHLGH. Several stakeholders highlighted both a lack of incentives rewarding circular practices and the existence of perverse incentives preventing the application of the food waste hierarchy across the Irish food system (e.g. incentivising food going to animal feed rather than redistribution for human consumption). Furthermore, past and present agri-food strategies underscore a limited understanding of the implications and benefits of circular food systems. Harmonised, accurate and timely data is essential to understand where in the value chain food is being lost and why, but the current lack of a harmonised measurement methodology and collection does not yet allow doing so. There is significant uncertainty regarding the level of food waste from processing and manufacturing, which could amount to 500 000 tonnes, but this figure is likely overestimated due to the inclusion of non-food waste in the food waste category. Reliable data is virtually non-existent at the primary production level; the further upstream food waste occurs, the more data quality weakens (EPA, 2021[51]). However, data quality on food waste is set to improve as part of a new EU requirement for member states to report food waste data. The EPA is working on a national food waste measurement protocol, which is in its final stages of development, and an EPA-funded research project will provide data and information on the estimated quantities of food waste and food loss arising from primary production. This could allow the introduction of price-based incentives to prevent or redistribute food waste downstream.

Places

Circular economy initiatives take place at various scales, ranging from the micro level (e.g. neighbourhood) to the metropolitan, regional and national levels, where, in some cases, linkages across urban and rural areas are particularly relevant (OECD, 2020[2]). These different scales are reflected in the range of Irish circular economy initiatives.

At the micro level, certain Irish university campuses have implemented initiatives related to the circular economy as part of network-supported sustainability programmes. In partnership with the EPA, the Irish University Association has set up a Campus Living Labs Sustainability Project in 2021, to help university campuses achieve legal waste management requirements, including the reduction of residual waste, increasing waste separation and recycling, and reducing food waste per capita by 50% in line with SDG 12.3 (IUA, 2021[57]).

The shift to a circular economy can also strengthen links between urban and rural areas in Ireland. The forthcoming CircBioCityWaste project will transform urban biowaste (e.g. sludge, dairy processing sludge and black bin waste) into sustainable bio-based fertilisers and biochemicals for agriculture and food, as well as cosmetics and pharmaceuticals (MTU, 2022[58]). The collaborative project is led by Munster Technological University and funded by the EPA and DAFM. Farmers' markets, co-operative stores in

cities and towns (e.g. Limerick's Urban Co-Op (The Urban Co-Op, 2021[59])) and neighbour food distribution networks, which provide farmers with an online platform to sell their products locally and consumers to collect their order at a local collection point (NeighbourFood, 2021[60]), are well established in Ireland and contribute to narrowing food loops. Community-supported agriculture (CSA), a partnership whereby people agree to pay a fixed seasonal fee to farmers in exchange for the delivery of healthy, local produce, is also promoted via the CSA Network Ireland as a means of localising food production and consumption (CSA Network Ireland, 2021[61]). International examples of urban-rural collaboration within a circular economy are highlighted in Box 3.6.

Box 3.6. International examples of urban-rural collaboration on the circular economy

The metabolic connection between urban and rural areas creates opportunities for collaboration within the circular economy. For example:

- In the province of **Groningen, Netherlands**, the local Making Space project (2019-20) aims to set up a local value chain and establish a link between creative industries in the city and its rural areas. The initiative aims to create new products from renewable resources available within the territory of the province.
- In **Tampere, Finland**, a local sustainable development company (EcoFellows) is co-ordinating rural-urban partnerships related to biogas. The company works as a hub bringing together different actors that have not usually been in contact before (farms, power plant operators, logistics providers, etc.).
- In **Kitakyushu City, Japan**, a food recycling loop has been established to use compost generated in urban areas as fertilisers in rural areas or as a source of energy for the city.
- In **Valladolid, Spain**, the Municipal Food Strategy intends to improve co-ordination between urban and rural areas and create employment opportunities whereby the city can act as an agro-incubator for responsible consumption and local production. It foresees the creation of a "land bank" (*banco de tierras*) that the municipality could rent to local producers at affordable costs. Moreover, the municipality is planning actions to improve the measurement, traceability and quality of organic waste from urban (e.g. hotel and restaurant sector) and rural areas.
- The city of **Lisbon, Portugal**, created spaces for local producers to sell their products in the city (e.g. food markets where local, organic or sustainable products can be bought). This measure aims to encourage growth in the number of producers and farms in the surrounding areas.

Source: OECD (2020[2]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en.

Many cities and regions have industrial symbiosis processes and clusters, starting from the principle that one person's waste is another's resource or input (OECD, 2020[2]). Two such initiatives in Ireland are the Circular Bioeconomy Cluster South-West and an industrial symbiosis pilot. The industrial symbiosis pilot, facilitated by Irish Manufacturing Research (IMR) and funded by the EPA's Green Enterprise Fund, took place for one year (2020-21) between St. Mel's Brewery and Panel to Food in Longford Industrial Park (Irish Manufacturing Research, 2021[62]). The key pilot output was the launch of craft beer to demonstrate the feasibility of using surplus cooked dough as a partial material substitute for malted barley. The Circular Bioeconomy Cluster South-West gathers industry, businesses, government and research centres to design and implement circular initiatives to member companies, focusing on marine, agriculture and waste-to-value (Circular Bioeconomy Cluster South West, 2021[63]). It supports members with different services such as project development, project partner identification, talent development and funding. The cluster was founded by the Circular Bioeconomy Research Group (CircBio), founded in 2019 within Shannon Applied Biotechnology Centre at Munster Technological University, which focuses on strengthening collaboration between researchers, technology providers and industry to develop, scale and internationalise next-generation bio-based products, services and value chains, whilst driving forward the transition to a low-carbon circular economy. As of 2022, the Circular Economy Programme will support "demonstration hubs", targeted projects to demonstrate circular economy actions at the county scale, as a model for national rollout (EPA, 2021[64]). Projects could include best practice demonstrators for construction and demolition sites and supporting reusable packaging in towns, among others.

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Notes

[1] The proposed terms of reference for the Circular Economy Working Group within the Strategy foresee that a scoping exercise for a material flow analysis will take place in the first half of 2022.

[2] As of July 2021, cotton bud sticks, cutlery, plates, stirrers, chopsticks, straws, polystyrene containers and oxo-degradable plastic products will be banned in Ireland.

[3] The Irish Waste Management Association is working on a digital DRS whereby consumers would pay a deposit on packaged goods and reclaim that deposit digitally when they place the packaging in the correct household bin to facilitate recycling.

[4] Preparation for reuse is the process by which products or components that have become waste are prepared so that they can be reused without any other pre-processing.

[5] According to the latest figures from the National Waste Collection Permit Office, 885 870 houses had been given brown bins in 2020, out of 1.3 million houses that avail of a collection service.

[6] The EC has end-of-waste criteria for iron, steel and aluminium scrap and glass cullet.

[7] Construction covers both buildings and civil engineering works.

[8] The IGBC is a non-profit organisation supported by businesses across the built environment value chain.

[9] Croatia, Finland, France, Germany, Italy, the Netherlands, Poland, Spain and the United Kingdom.

[10] Teagasc is Ireland's Agriculture and Food Development Authority.

[11] As highlighted by the EPA (2020[20]), however, actions addressing nutrient loss must be place-based, as the soil type and geographical setting affect nutrient behaviour in the landscape. In many areas, existing pressures have already exceeded the capacity of soil and water bodies to accept nutrients and sediment without causing significant harm. As a result, place-based action such as Local Catchment Assessments is being taken locally.

[12] A 2019 commercial food waste survey of 151 hospitality businesses across Ireland highlighted that this was due to the insufficient provision of bins by waste collection companies (34% of respondents), the lack of storage space for multiple bins (22%) and hygiene issues (attraction of vermin, 16% and bad smell, 14%) (RedC, 2019[65]). Monetary incentives and staff training were highlighted as the main means of encouraging better food waste separation (17% and 15% respectively).

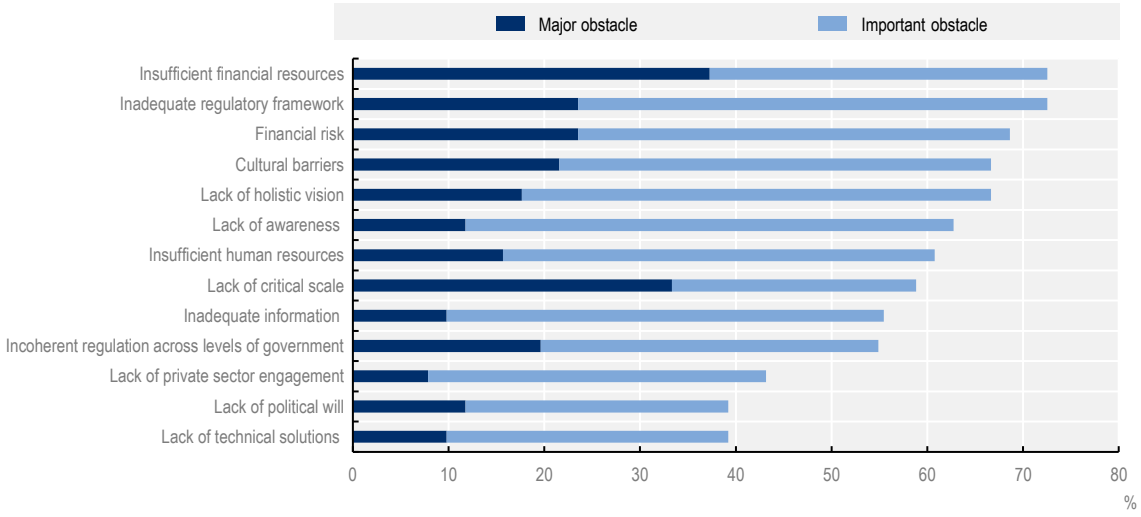
4 Governance challenges to the transition to a circular economy

This chapter describes the main challenges that Ireland faces in the transition from a linear to a circular economy. Key governance gaps relate to a sectoral approach towards the circular economy, mainly focused on waste management rather than resources management, regulatory gaps, limited use of economic instruments to push behavioural change and a lack of awareness, capacity and information on the circular economy among key stakeholders.

Governance gaps in Ireland

Building on the OECD framework "Mind the gaps, bridge the gaps" (Charbit and Michalun, 2009[1]), which was first applied in depth to identify gaps towards effective multi-level water governance (OECD, 2011[2]), the OECD synthesis report on the circular economy in cities and regions finds that major obstacles for the transition towards a circular economy relate to funding, regulation, policy, awareness and capacity (OECD, 2020[3]). Insufficient financial resources, inadequate regulatory frameworks, financial risks, cultural barriers and the lack of a holistic vision are among the major obstacles identified by more than one-third of the 51 cities and regions surveyed (Figure 4.1).

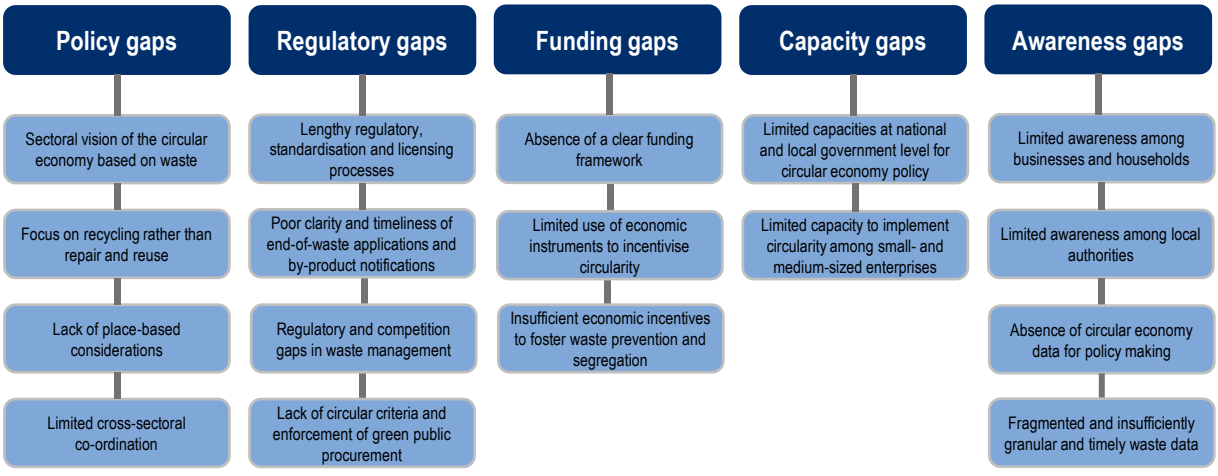
Figure 4.1. Main obstacles to the circular economy in 51 surveyed cities and regions



Source: OECD (2020[3]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en.

This section presents the main governance obstacles in the transition to a circular economy in Ireland (Figure 4.2), as a result of the interviews of over 80 stakeholders during OECD virtual missions to Ireland (11-13 March, 11-14 October 2020 and 6-9 July 2021), as well as outputs from a policy seminar gathering over 50 stakeholders of the circular economy in Ireland (19 October 2021) and desk-based research.

Figure 4.2. Governance gaps for a circular economy in Ireland



Policy gaps

In Ireland, as in many other countries, the circular economy is seen as a waste management policy. As such, the Waste Action Plan for a Circular Economy (WAPCE) is Ireland's new waste management policy for the 2020-25 period. Ireland's circular economy policy needs to overcome three main obstacles:

- **A sectoral view of the circular economy, mainly based on waste**. Irish circular economy policy should move from waste to resources management and take a more holistic approach that sees the circular economy as a cross-sectoral driver of economic growth, job creation, social well-being and environmental protection. Many sectoral policies across the Department of the Environment, Climate and Communications (DECC) and other departments mention the circular economy but it is often viewed as a waste management and resource efficiency tool rather than a new economic approach to providing goods and services. Moreover, the suggestion of the recently published Whole of Government Circular Economy Strategy (hereafter "the Strategy") to invite all members of the current Waste Advisory Group to join the new Circular Economy Advisory Group may hinder the development of a holistic vision for circular economy policy in Ireland. New stakeholders relevant to the circular economy should be invited to join the advisory group, such as knowledge institutions and universities, designers, trade associations and local authority representatives.
- **A focus on recycling and recovery rather than preventing, repairing and reusing.** This is exemplified by the fact that increasing Ireland's circularity rate (which essentially measures recycling and recovery) to the EU average by 2030 is the only measurable and time-bound objective of the Strategy. This holds two sets of limitations: first, it does not consider with the same level of ambition the impacts of upstream activities in relation to the circular economy, consisting of preventing, repairing and reusing; second, it does not properly take into account that the country's extractive activities are mostly based on biomass or non-metallic minerals, which are less suited to recycling than materials such as metallic minerals.
- **Limited place-based considerations**. By the end of 2022, Ireland will have moved from Regional Waste Management Plans for each of the three waste management regions (Regional Waste Management Planning Offices, RWMPOs) to a national Waste Action Plan for a Circular Economy 2022-2028 setting the same targets for all three regions. Up to 2020, the regional plans already lacked a place-based approach as they set almost the same targets for each region. The national plan will officialise this homogeneity of targets across regions. On the one hand, this is seen as a way of enhancing the sector's capability of responding to the policy challenges set out in the WAPCE and an opportunity to enable active collaboration and action with key stakeholders in support of a circular economy. On the other, it may continue to fail to account for local specificities (e.g. differences in income, population density and access to services such as bring banks) and retain a focus on waste, missing out on opportunities to move from waste to resources management in line with a holistic circular economy approach.

The Strategy is a crucial opportunity for the DECC to extend ownership of circular economy policies to other relevant government departments. To date, there has been limited co-ordination between environmental departments and agencies with economic counterparts (e.g. Department of Enterprise, Trade and Employment) to factor the value-added of the circular transition into Ireland's economic recovery and growth agenda. The lack of co-ordination is also visible in relevant sectors of the circular economy: for instance, there are few links between the DECC and the Environmental Protection Agency's (EPA) work on downstream food waste and work on upstream food loss led by the Department for Agriculture, Food and the Marine (DAFM) and supported by Teagasc and the Department of Housing, Local Government and Heritage (DHLGH). Moreover, the Strategy still lacks a proper framework to measure progress since just one of five objectives is measurable and time-bound, and there is no timeline for the implementation of the objectives aside from a few examples (e.g. the implementation of a national circular economy online platform by the end of 2022).

Regulatory gaps

While awaiting the new Circular Economy Bill expected by mid-2022, there is no legislative framework for the circular economy in Ireland. Until the bill comes into force to provide a crucial foundation to support the transition towards a circular economy in Ireland, regulatory gaps notably relate to end-of-waste and by-product processes, extended producer responsibility (EPR), the licensing of waste treatment facilities, waste management and green public procurement (GPP).

Regulation enabling timely and reliable decisions on end-of-waste is essential to reduce waste, but many stakeholders observe that the end-of-waste process is lengthy and unreliable in Ireland. End-of-waste criteria specify when certain material considered as waste ceases to be considered as waste and becomes a product or material. National end-of-waste criteria have not yet been defined in Ireland and, at the European Union (EU) level, they are defined for three waste streams only.[1] As such, entities (e.g. businesses) wishing to reuse material considered as waste (e.g. metal from a demolition site) from a waste stream outside of the ones covered by EU legislation must apply to the EPA for a decision on end-of-waste status. These decisions are often lengthy and can deter businesses from applying. The WAPCE sets out several actions to streamline the process for priority waste streams, particularly in the construction and demolition sector. These actions keep a focus on individual applications, rather than developing national end-of-waste applications for identified priority waste streams. However, the last measure of the WAPCE on end-of-waste recognises the importance of more strategic action and commits to establishing a working group that will develop national end-of-waste applications.

Similarly, by-product notification processes lack clarity and timeliness for many Irish businesses. By-product notification processes enable certain substances to be considered as a by-product, i.e. a secondary product made as the result of a manufacturing process, rather than a waste, allowing its reuse. The lack of clarity and timeliness in by-product notification processes is recognised by the WAPCE, which outlines actions to address it. Under the EU Waste Framework Directive, construction and demolition site managers must notify where waste and by-products go but the absence of procedure to notify direct reuse creates a legislative grey area. This ultimately represents an obstacle to material reuse and waste prevention on construction and demolition sites.

In general, lengthy regulatory, licensing and standardisation processes hamper circular practices and investment. This is notably the case of the aforementioned regulatory processes, the licensing of new waste treatment facilities and the creation of standards for secondary or recycled materials. The licensing process for additional waste treatment facilities can be very lengthy, disincentivising private investment. The Circular Economy Bill is expected to streamline the decision-making process for licensing new facilities while ensuring that adequate environmental safeguards are in place (DECC, 2020[4]). The WAPCE identifies permit exemptions as having the potential to alleviate pressure on existing facilities. It envisages waiving the requirement for a permit for facilities that can dispose of their own non-hazardous waste and recover waste. Furthermore, according to businesses developing circular construction materials, the National Standards Association of Ireland's accreditation process for secondary and recycled materials can be long enough to discourage the development and use of circular construction materials.

Extended producer responsibility (EPR) schemes can be extended to new waste streams and improved to consider reuse and repair, beyond recycling. The inclusion of four new waste streams (tobacco products, wet wipes, balloons and fishing gear containing plastic) in July 2021 in Ireland, in line with the EU Single-Use Plastics Directive, is a step in the right direction. Existing EPR schemes also show room for improvement. For instance, although the refurbishment and sale of waste electrical and electronic equipment (WEEE) is the only activity formally registered under "preparation for reuse", WEEE taken back by EPR schemes does not get treated for reuse as there are no companies registered to do so in Ireland. There are also issues with the collection method (collectors lack direct access to WEEE from the general public) and a lack of trust among consumers regarding the wiping of their data on personal devices (Coughlan and Fitzpatrick, 2017[5]).

Waste management in Ireland has undergone significant consolidation over the past 20 years but the current waste governance framework presents regulatory and competition gaps. The Waste Advisory Group of the WAPCE found that the current market structure offered relatively low control for regulators in terms of achieving guaranteed performance levels, contrary to other Irish utilities. Ireland's side by side waste collection, which requires households to contract with waste management companies to benefit from a kerbside collection service, does not automatically lead to competition: in fact, the market is highly concentrated in many local authorities (CCPC, 2018[6]). Up to 25% of Irish households do not have a choice of operator and 20 operators serve 90% of households with a collection service.

Finally, GPP does not include circular and bioeconomy criteria and is not systematically implemented. In fact, the price is often the dominating criterion for awarding procurement contracts (in addition to the construction period in the built environment sector). The authorities awarding the contracts tend to only consider upfront capital costs rather than the lifecycle costs (e.g. operation, maintenance and end-of-life). This can limit the uptake of circular and sustainable solutions with higher capital costs but lower operation, maintenance and end-of-life costs. The government's commitment to implement GPP in all tenders using public funds by 2023 is a step in the right direction but circular and green procurement requires a broader shift away from tendering processes that prioritise the lowest price towards one giving greater importance to life cycle costs, environmental impacts and resource efficiency. This may also favour the participation of small- and medium-sized enterprises (SMEs) in tenders, as Irish SMEs are often unable to compete with larger or multinational corporations for procurement contracts favouring the lowest capital investment cost, as highlighted by Irish procurement stakeholders.

Funding gaps

While several government-funded or government-supported funding initiatives for the circular economy exist, this approach is piecemeal and lacks a framework that also considers private funding and investment in the circular economy. Additionally, government incentives and supports for private investment in the circular economy are not outlined in the Strategy. Mobilising private investment is essential, as circular business projects do not currently attract equity and venture capital in Ireland, but Irish investors often perceive investing in the circular economy as risky. For instance, the Halo Business Angel Network, which is responsible for the development of business angel activity and angel syndicates in Ireland, has identified a very limited appetite for circular economy investments due to insufficient or uncertain return on investment and a lack of prior experience.

The Irish government applies limited economic instruments to incentivise circularity and resource efficiency beyond a carbon tax and levies on plastic bags and landfill. The levies achieved their intended outcomes (see Chapter 2) but the revenue generated declined as a result of the shrinking tax base, accounting for just 0.5% of revenue from environmentally-related taxes in Ireland. Regulations envisaged under the Circular Economy Bill are set to introduce new levies on single-use cups (the "latte levy") and on recovery operations at municipal solid wastes landfill, waste-to-energy and co-incineration plants, and the export of municipal solid waste (EUR 5 per tonne). Additional levies on virgin plastics, construction aggregates and fast fashion in the medium to long term should also be examined under the WAPCE. Although these levies will likely be successful in achieving their intended outcome, a more holistic approach that rewards ecodesign, repair, reuse, remanufacturing and recycling across the economy, and penalises the use of virgin materials in general, beyond specific materials such as plastic, is needed to shift from a linear to a circular economy in Ireland. Currently, virgin materials are often significantly cheaper and more readily available than secondary materials, creating a tilted playing field in favour of virgin materials.

Furthermore, there are insufficient economic incentives to unlock a behavioural shift among households and businesses towards waste prevention and more effective waste separation. The recent abolishment of flat fees for household waste collection[2] and the move towards lift-based or weight-based charging, enabled by radio-frequency identification chips in all household bins, should incentivise waste prevention,

correct waste separation and allow higher recycling rates. However, the effectiveness of an incentivised charging system depends on the prices charged by waste collection operators, as well as public authorities' capacity to enforce continued collection and disposal, as hikes in collection charges can lead to increased illegal dumping. Implementing incentivised charging and enforcement of correct waste separation in the commercial sector is a significant low-hanging fruit to increase recycling rates in Ireland, as waste separation rates are much lower in the commercial than in the household sector. The Circular Economy Bill should effect incentivised charging for the commercial sector, as is the case for households.

Capacity gaps

There is strong willingness and momentum to transition towards a circular economy at the national government level. However, the DECC is still in the phase of building technical and human capacities and expertise on the circular economy, which is a relatively new concept in Irish policy making. Beyond the DECC, capacity gaps also exist among local authorities and businesses.

Local authorities play a crucial role in Ireland's circular transition but the lack of local authority staff and capacity currently limits their role in the transition. Local authorities' proximity to citizens and local businesses and knowledge of local context makes them both essential to ensure popular support for the transition and well placed to support and implement circular economy initiatives. Furthermore, local authorities have competencies in policy areas that are relevant for the circular economy, such as the built environment, land use and waste management. However, local authority staff working on waste and the circular economy currently spend most of their time on litter control and complaints, at the detriment of supporting the circular economy transition locally. More staff, knowledge and financial resources are needed to effect the circular transition from the bottom up in Ireland.

Capacity gaps among Irish SMEs hamper the adoption of circular practices and applications for funding. For instance, moving from simply recycling packaging to implementing a deposit and return system can be operationally challenging and costly. Moreover, while funding from research and innovation schemes is available (e.g. Green Enterprise Fund), small businesses lack the specific knowledge, skills, resources and time to apply to calls. The same gaps in knowledge, skills, resources and time also hamper SME participation in public procurement tenders, including GPP. In addition, the commercialisation of successful research demonstrations is limited due to capacity gaps in operationalising pilots, resulting in lost opportunities for the development of innovative circular solutions.

Awareness gaps

Despite efforts to close the awareness gap on the circular economy among businesses (e.g. establishment of CIRCULÉIRE, Ibec-led circular economy workshops for affiliated trade associations) farmers (e.g. Bioeconomy Ireland Week) and civil society (e.g. Rediscovery Centre, MyWaste.ie), there is still limited awareness and understanding of the costs and benefits of a circular economy. Just 51% of businesses understand what is meant by the circular economy (Ibec, 2019[7]). While built environment policies increasingly emphasise sustainability and resource efficiency, there is little dissemination of knowledge on circular practices within the construction sector. Farmers also lack awareness of the potential of circular economy and bioeconomy solutions to reduce costs and increase income, as well as the sustainability of their activities. Existing agricultural sustainability programmes focus on climate mitigation and environmental degradation, and do not address circularity beyond resource efficiency. Businesses, investors and others with an interest in circular business models and products have access to limited information on relevant funding schemes. There is no national platform providing information and guidance on international, EU and national funds; however, establishing a national online platform for the circular economy is a short-term priority of the Strategy. Regarding civil society, only one in four Irish adults understands what is meant by the circular economy (European Recycling Platform, 2021[8]).

Irish cities also lack local circular economy strategies, which could be a consequence of high centralisation and limited awareness of the potential benefits of the circular economy at the local government level. Some circular initiatives are in place at the city level, such as repair events with data collection to drive policy and manufacturing change in Limerick. Other cities such as Dublin have identified the circular economy as a sector for the city to support (Dublin City Council, 2020[9]). However, this sectoral view of the circular economy underscores the lack of awareness of the wide-ranging benefits of the circular economy in terms of value creation, employment, resilience and the environment at the local level. The awareness gap also stems from a data and information gap.

Data for circular economy policy (e.g. on reuse and repair) are currently limited to waste data in Ireland. Additionally, data on waste are fragmented and lack the disaggregation and timeliness needed to inform circular economy policy in a holistic, place-based and timely way. Data and insights on total waste are unavailable on EPA and Central Statistics Office (CSO) platforms.[3] The EPA produces official waste statistics for reporting on compliance with EU targets and certain other datasets of national interest, including municipal waste (which accounts for one-sixth of total waste generated in Ireland), waste from selected sectors (such as construction and demolition) and waste streams required for European reporting including WEEE, packaging and end-of-life vehicles. This fragmentation hinders a holistic view of waste streams in Ireland. Regionally and locally disaggregated data on waste is scarce: the EPA's National Waste Statistics have regionally disaggregated data only for household waste and data publications from RWMPOs are sparse, with the latest available data going back to 2014-15. Additionally, the current time lapse required for data publication hampers real-time, data-driven policy making. Furthermore, the reliability of new indicators is insufficient to support public authorities in taking informed decisions. This is notably the case of food waste, which does not currently have a harmonised measurement methodology across waste sources; the further upstream food waste occurs, the more data quality weakens. However, data quality on food waste is set to improve as part of a new EU requirement for member states to report food waste data. The EPA is working on a national food waste measurement protocol, which is in its final stages of development.

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Notes

[1] These waste streams are: iron, steel and aluminium scrap; glass cullet; copper scrap.

[2] In June 2017, the government phased out flat fees for household waste collection by ensuring that all household customers were moved to pricing plans that based charges on usage when renewing their annual waste collection contracts (DECC, 2021[10]). By October 2018, all household customers should have transitioned from flat fees.

[3] The CSO is the competent authority for fulfilling Ireland's obligations under the Waste Statistics Regulation, which it does in co-operation with the EPA.

5 Policy recommendations and actions for a circular economy in Ireland

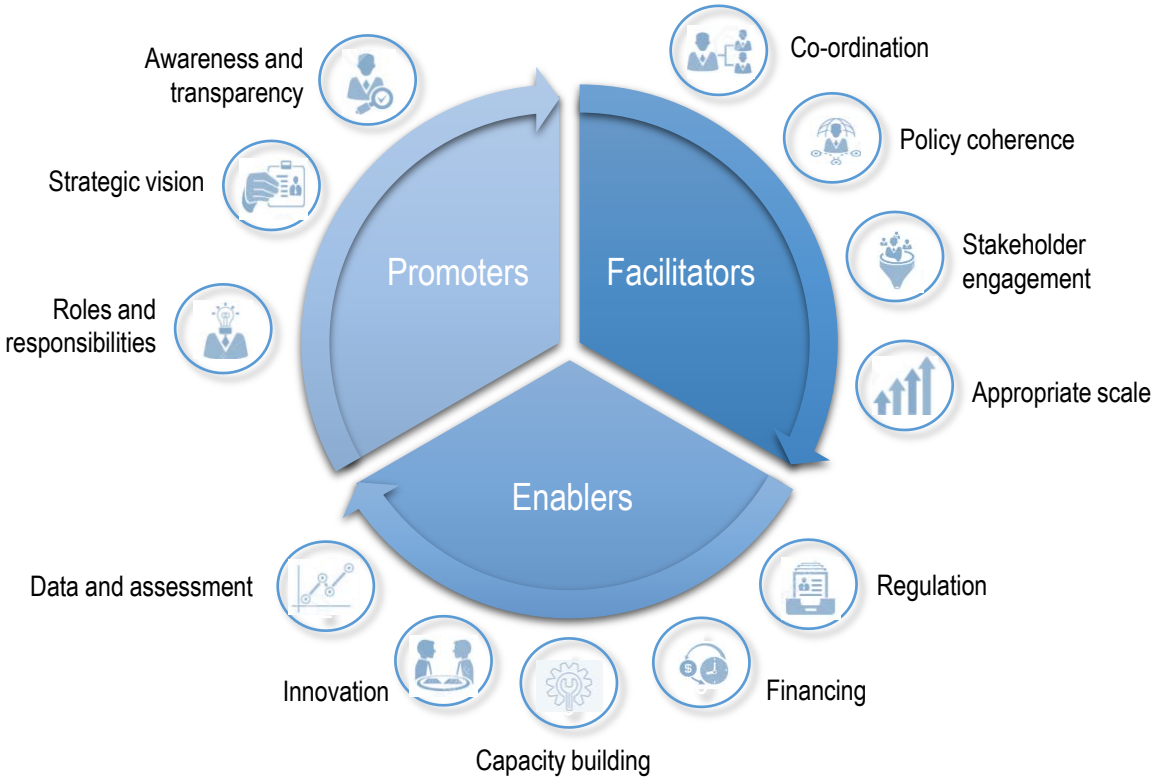
In response to the challenges identified in Chapter 4, this chapter suggests policy recommendations for the transition to a circular economy in Ireland. The recommendations specify how national and local governments can work together to act as promoters, facilitators and enablers of the circular economy, building on the OECD Checklist for Action on the Circular Economy in Cities and Regions.

Transitioning towards the circular economy: A Checklist for Action

The transition towards the circular economy is a shared responsibility across levels of government and stakeholders. National governments can support the transition towards the circular economy by providing an overarching policy framework for all levels of government that empower local and regional authorities to build their own vision of the circular economy based on common targets and objectives. National governments can also support the circular transition with regulatory, financial and economic instruments, particularly by correcting unwanted incentives, removing harmful subsidies, pricing in environmental externalities and enhancing regulatory requirements on the ecodesign of products.

The OECD Checklist for Action for the circular economy, based on 12 key governance dimensions, provides guidance to governments to promote, facilitate and enable the circular economy. While this checklist was created for cities and regions, these dimensions can be applied across levels of government. The 12 dimensions are grouped into 3 clusters corresponding to the complementary roles of cities, regions and national governments as promoters, facilitators and enablers of the circular economy (Figure 5.1) (OECD, 2020[1]) These governance dimensions were inspired by the OECD Principles on Water Governance (OECD, 2015[2]) and are accompanied by the OECD Scoreboard on the Governance of the Circular Economy, developed thanks to the collective efforts from case studies on the circular economy in several cities (OECD, 2020[3]; 2020[4]; 2020[5]). The scoreboard is also the result of a literature review that collected over 450 indicators from national, regional and local circular economy strategies (OECD, 2021[6]).

Figure 5.1. The governance of the circular economy in cities and regions: A Checklist for Action



Source: OECD (2020[1]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en.

- **Promoters**: Governments at different levels can promote the circular economy by acting as a role model, providing clear information and establishing goals and targets, in particular through: defining who does what and leading by example (roles and responsibilities); developing a circular economy strategy with clear goals and actions (strategic vision); promoting a circular economy culture and enhancing trust (awareness and transparency).
- **Facilitators**: Governments at different levels can facilitate connections and dialogue, in particular by: implementing effective multi-level governance (co-ordination); fostering system thinking (policy coherence); facilitating collaboration amongst public, not-for-profit actors and businesses (stakeholder engagement) and adopting a functional approach (appropriate scale).
- **Enablers**: Governments at different levels can create the enabling conditions for the circular transition by: identifying the regulatory instruments that need to be adapted or implemented (regulation); mobilising financial resources and allocating them efficiently (financing); adapting human and technical resources to the challenges to be met (capacity building); supporting business development (innovation); and generating an information system and assessing results (data and assessment).

This chapter suggests policy recommendations and related actions for the transition to the circular economy in Ireland. It builds on international best practices identified by the OECD (2020[1]), desk-based research and interviews carried out with over 100 stakeholders during virtual OECD missions to Ireland in March and October 2020 and in July 2021, as well as an online policy seminar on 19 October 2021.

It is important to note that:

- **Actions are neither compulsory nor binding**: Identified actions address a variety of ways to implement and achieve objectives. However, they are neither compulsory nor binding. They represent suggestions, for which adequacy and feasibility should be carefully evaluated by the government of Ireland, involving stakeholders as appropriate. In turn, the combination of more than one action can be explored, if necessary.
- **Prioritisation of actions should be considered**: Addressing all recommendations simultaneously is neither feasible nor desirable, so prioritising actions is key. Table 5.1 provides an indicative timetable for actions (short, medium and long terms) based on the discussion and results of the Policy Seminar on the Circular Economy in Ireland held on 19 October 2021.
- **Resources for implementation should be assessed**: The implementation of actions will require human, technical and financial resources. When prioritising and assessing the adequacy and feasibility of suggested actions, the resources required to put them in practice should be carefully evaluated, as well as the role of stakeholders that can contribute to the implementation phase.
- **Proposed actions should be updated in the future**: Potential new steps and objectives may emerge as actions start to be implemented.
- **Several stakeholders should contribute to their implementation**: Policy recommendations and related actions should be implemented as a shared responsibility across a wide range of actors.

Table 5.1. Suggested policy recommendations, actions and sequence for the circular economy in Ireland

Role	Governance dimension	Action	Short term	Medium term	Long term	Selected leading actors
Promoter	Roles and responsibilities	Identify the entities responsible for the different objectives of the strategy and enforcement mechanisms.	X			Department of the Environment, Climate and Communications (DECC)
		Consider placing the strategy under the oversight of the Department of the Taoiseach, the Prime Minister of Ireland, as is the case for the Climate Action Plan.		X		DECC Department of the Taoiseach
		Ensure that other government departments are involved in circular economy policy and included in the terms of reference of the Circular Economy Working Group.	X			DECC
		Consult the Department of Finance on decisions related to the implementation of the strategy, especially to enhance the use of economic instruments and to allocate funding.	X			DECC Department of Finance
		Designate a clear role for the regional assemblies to embed circularity in regional and local planning.		X		DECC Department of Public Expenditure and Reform (DPER) Regional Assemblies
		Broaden the role of local authorities in circular economy policy implementation by: • Embedding circularity in Local Economic and Community Plans. • Mandating local Action Plans for the Circular Economy. • Broadening spending responsibilities for subnational governments.	X	X	X	DECC Environmental Protection Agency (EPA) Government of Ireland Local authorities
		Define the conditions for local authorities to lead by example: • Prevent waste generation in local events, activities and establishments. • Increase levels of separate waste collection. • Apply circular criteria to green public procurement (GPP) and test circular business models. • Promote the use of secondary materials and products and construct infrastructure and buildings in a circular manner. • Nominate circular economy “champions” from local businesses and households. • Support business and community-led circular economy initiatives	X			Local authorities
	Strategic vision	Set out a whole-of-government approach that involves economy-wide policy areas.	X			DECC Circular Economy Working Group Circular Economy Advisory Group

Role	Governance dimension	Action	Short term	Medium term	Long term	Selected leading actors

		Consider developing the second iteration of the strategy based on:
		• An analysis of stocks and flows.
		• A map of existing circular economy-related initiatives.
		• Clear and achievable objectives, goals, timeline for action and expected outcomes:
		  ○ Consider adding alternative objectives to the circularity rate.
		  ○ Set clear timelines for the achievement of intermediate targets.
		• A dedicated budget and resources.
		• A shared vision with stakeholders.
		• Explore the application of circular economy principles to the food systems and the built environment.
		• Regular monitoring of progress made and impact evaluation.
			X			DECC
						Circular Economy Working Group
						Circular Economy Advisory Group

	Awareness and transparency	Develop a national circular economy online platform, including: • Stakeholder profiles. • Circular projects, initiatives, news and events. • Support material. • A directory to find rental, repair and second-hand businesses locally. • A dashboard showing progress towards predefined circular economy targets. • National, regional and local contact points for the circular economy.	X			DECC EPA Regional Waste Management Planning Offices (RWMPOs) Local authorities Rediscovery Centre Universities CIRCULÉIRE Community Resources Network Ireland (CRNI) Bioeconomy Implementation Group
		Raise awareness on the circular economy through a dedicated communication campaign for citizens and businesses and co-ordinate a harmonisation effort on circular economy communication across levels of government.	X			DECC EPA RWMPOs Local authorities Rediscovery Centre
		Implement incentives for behavioural change conducive to circularity, including: • A Circular Economy Brand. • Circular economy labels. • Re-engineering existing standards for circularity.	X	X		DECC Circular Economy Working Group Circular Economy Advisory Group

Role	Governance dimension	Action	Short term	Medium term	Long term	Selected leading actors
Facilitator	Co-ordination	Activate the inter-departmental Circular Economy Working Group: • Map policies, targets, legislation, regulations, incentives and initiatives relative to the circular economy. • Mandate that all government bodies draw up and implement circular action plans.	X			DECC Department of Enterprise, Trade and Employment (DETE) Department for Agriculture, Food and the Marine (DAFM) Department of Housing, Local Government and Heritage (DHLGH) Department of Transport (DoT) Department of Education (DoE) Department of Further and Higher Education, Research, Innovation and Science (DFHERIS) DPER
		Co-ordinate with the DETE to foster the circular economy as an economic agenda.		X		DECC DETE
		Co-ordinate with government departments and agencies setting standards.		X		DECC DETE (National Standards Authority of Ireland, NSAI) DoT (Transport Infrastructure Ireland, TII)
		Enhance co-ordination between regional and local offices.		X		DECC EPA RWMPOs Climate Action Regional Offices Local authorities Local Enterprise Office (LEO)
		Establish formal co-ordination mechanisms on the circular economy between local authorities and the DECC and EPA respectively.	X			DECC EPA Local authorities
		Adapt and extend current regional waste management planning co-ordination mechanisms between the DECC, the EPA and local authorities.		X		DECC EPA Local authorities

Role	Governance dimension	Action	Short term	Medium term	Long term	Selected leading actors
	Policy coherence	Strengthen policy integration between the circular economy and climate change agendas.	X			DECC Climate Action Regional Offices (CAROs) RWMPOs
		Embed circularity in spatial and economic planning in Ireland via the National Planning Framework (NPF) ahead of the mid-term review (2027).			X	DECC DPER Regional assemblies
		Build the circular economy into Ireland's Enterprise strategy as a driver of employment, sustainability and resilience.		X		DECC DETE
		Enhance policy coherence and highlight the benefits of circular practices in water, agriculture and the bioeconomy.		X		DECC EPA DAFM Teagasc Irish Water Bioeconomy Implementation Group
	Stakeholder engagement	Engage with relevant constituencies that are absent from the Waste Advisory Group, notably: • Local authorities. • The research community (notably universities, research centres, and universities and institutes of technology). • The design community across sectors, from fashion and product designers to architects, through organisations such as the Design & Crafts Council Ireland, the Royal Institute of the Architects of Ireland and the National College of Art and Design. • Irish standard setters. • Irish trade associations.	X			DECC Local authorities Local Authority Prevention Network (LAPN) Universities/Research centres/ Universities and institutes of technology Design & Crafts Council Ireland Royal Institute of the Architects of Ireland National College of Art and Design DETE (NSAI) DoT (TII) Chambers Ireland Ibec
	Appropriate scale	Provide a framework for setting up circular initiatives at different scales: • Facilitate local demonstration projects by supporting alignment with national policy, providing funding and enhancing co-ordination among key local players.		X		DECC Universities and knowledge institutions EPA Local authorities

Role	Governance dimension	Action	Short term	Medium term	Long term	Selected leading actors
		• Facilitate local and regional industrial symbiosis and clusters, where appropriate and possible, building on the experience of the existing Circular Bioeconomy Cluster South-West and considering costs and benefits of the operation.				
Enabler	Regulation	Set up a regulatory framework conducive to ecodesign, repair, reuse and remanufacturing.		X		DECC EPA
		Streamline regulatory processes for reusing material considered as waste through end-of-waste and by-product processes.	X			DECC EPA Local authorities
		Broaden extended producer responsibility (EPR) to new waste streams and improve existing EPR schemes to favour reuse.		X		DECC
		Explore local authorities' potential for the circular transition within existing frameworks and as part of the Circular Economy Prevention Network, the new LAPN under the EPA's Circular Economy Programme.	X			Local authorities EPA (Circular Economy Network) Regional assemblies
		Ensure that circular criteria are included alongside green criteria in GPP.	X			DECC DPER (Office of Government Procurement, OGP)
	Financing and behavioural change	Broaden the scope of price-based tools considered in the Waste Action Plan for a Circular Economy (WAPCE) and provide clarity on the timeline for their implementation.	X			DECC
		Review and adjust environmental subsidies, to reward circularity and discourage waste.	X			DECC Department of Finance
		Review and adjust environmentally-related taxes to reward circularity and discourage waste.		X		DECC Department of Finance
		Consider a broader shift of the tax burden from direct sources such as labour to indirect sources such as consumption or pollution.			X	Government of Ireland
		Set up a clear funding framework for the circular economy: • Ensuring that adequate levels of funding are in place. • Setting up dedicated local funding schemes. • Fostering private investment in the circular economy with alternative funding methods. • Leveraging European Union (EU) funds.	X			DECC EPA Department of Finance

Role	Governance dimension	Action	Short term	Medium term	Long term	Selected leading actors
	Capacity building	Take part in capacity-building programmes for circular economy policy making.	X			DECC
		Design and implement capacity-building programmes for local authorities to favour a shift from litter and waste management to resources management and circular economy.	X			DECC EPA Local authorities
		Design and implement sectoral circular economy training and toolkits for workers and businesses (especially SMEs) on the circular economy.		X		DECC EPA DETE DHLGH DAFM DPER Modos Rediscovery Centre CIRCULÉIRE Ibec Chambers Ireland
		Engage with the DFHERIS to design lifelong learning programmes focusing on circular economy skills.		X		DECC DFHERIS Universities and knowledge institutions
		Develop guidance on circular economy investment for private investors.		X		DECC Halo Business Angel Network
		Integrate circularity into first-, second- and third-level education curricula to build in awareness and to foster skills for a circular economy.		X		DECC DoE Rediscovery Centre EPA
		Support the development of regional circular economy hubs to expand capacity building for citizens nationwide.		X		DECC EPA Rediscovery Centre
	Innovation	Create spaces for experimentation.		X		DECC Universities Rediscovery Centre

Role	Governance dimension	Action	Short term	Medium term	Long term	Selected leading actors
		Stimulate demand by being a launching customer.		X		DECC OGP
		Create incubators to promote circular economy projects.		X		DECC EPA Rediscovery Centre's Circular Economy Academy
		Establish a single window for the circular economy for businesses.		X		DECC DETE (LEOs)
		Introduce tailored advisory services to support public and private sector project promoters in making circular economy initiatives commercially viable.		X		DECC EPA LEOs Ibec Chambers Ireland Irish Farmers Association
	Data and assessment	Implement data collection for circular economy policy: • Harmonise data collection among data providers to feed into a national circular economy information system. • Expand data collection from waste-related data to environmental, economic and social data. • Collect locally disaggregated and sectoral data. • Invest in research to develop methodologies for qualitative and quantitative assessment.		X		DECC EPA Central Statistics Office (CSO) Universities
		Monitor data: • Track progress on implementing the governance framework required for the circular economy. • Monitor the achievement of the objectives and targets set out in the strategy through a standardised set of indicators feeding into the national circular economy information system.	X			DECC EPA
		Share data: • Encourage data sharing from the private sector.		X		DECC EPA

Promoter

As a promoter of the circular economy, the government of Ireland can: i) clarify roles and responsibilities and lead by example; ii) promote and implement a vision for the circular economy by developing a circular economy strategy with clear goals and a timeline for action; and iii) raise awareness and transparency by promoting a circular economy culture and enhancing trust in the circular economy.

Roles and responsibilities: Clarify who does what and lead by example

Clarify roles and responsibilities

Defining clear roles and responsibilities for designing, financing, implementing and monitoring circular economy policy and initiatives across levels of government is key to avoiding gaps, overlaps and duplications of responsibilities. The Waste Action Plan for a Circular Economy (WAPCE), the Whole of Government Circular Economy Strategy (hereafter "the Strategy") and the Circular Economy Programme (hereafter "the Programme") have defined these roles:

- The Circular Economy Unit within the DECC is responsible for developing the national circular economy policy framework and overseeing its implementation, and for a share of circular economy funding (e.g. Circular Economy Innovation Grant Scheme, CEIGS).
- Through the Circular Economy Programme, the EPA supports the DECC in co-ordinating across levels of government in the implementation of the strategy. It also has responsibilities for policy support (data, insights and monitoring), regulation and funding (e.g. Green Enterprise).
- Regional Waste Management Planning Offices (RWMPOs) will continue to be responsible for the regional implementation of the five-year national waste management plans in the local authorities of their respective waste management regions. They will also continue to deliver regional and national circular economy and waste-related projects and initiatives.
- Local authorities will continue to have licensing and enforcement responsibilities for waste (e.g. for certain waste treatment facilities) and implement circular economy initiatives locally.

To effectively implement the Strategy, it is suggested to:

- **Identify the entities responsible for the different objectives of the strategy and enforcement mechanisms**. Defining who does what and how is essential to ensure accountability and should be a priority of the second iteration of the strategy.
- **Consider placing the Strategy under the oversight of the Department of the Taoiseach, the Prime Minister of Ireland, as is the case for the Climate Action Plan (CAP)**. The performance of different government departments in meeting CAP targets is supervised by the Department of the Taoiseach, ensuring cross-departmental and agency co-ordination (DECC, 2019[7]). Implementing a similar mechanism for the Strategy could raise the profile of the circular economy and establish it as a pillar of Ireland's climate mitigation strategy. The circular economy is systemic by nature and requires a holistic vision with strong co-ordination across government departments.
- **Make sure that other government departments are involved in circular economy policy and included in the terms of reference of the Circular Economy Working Group**. These should notably include the Department of Enterprise, Trade and Employment (DETE), the Department for Agriculture, Food and the Marine (DAFM), the Department of Housing, Local Government and Heritage (DHLGH), the Department of Transport (DoT), the Department of Education (DoE) and the Department of Further and Higher Education, Research, Innovation and Science (DFHERIS). The proposed terms of reference for the Working Group in the Strategy (Annex 7) do not yet specify

which departments will be involved. The DECC should publish this information in the final terms of reference as soon as possible.

- **Consult the Department of Finance on decisions related to the implementation of the strategy, especially to enhance the use of economic instruments and to allocate funding**. For instance, in Italy, the Ministry for Ecological Transition shares the responsibility for circular economy policy making with the Ministry of the Economy (see Box 5.1).
- **Designate a clear role for the regional assemblies to embed circularity in regional and local planning**. Regional assemblies have a significant but untapped role to play in the circular transition, as Ireland's National Planning Framework (and its regional declination, the Regional Spatial and Economic Strategy, RSES) covers social, economic, environmental and cultural development. The mandate of regional assemblies makes them well placed to act as a link between the European Union (EU) and national and local levels of government to embed circular principles in planning policy. Furthermore, their relations with all government departments make them well suited to transcend siloed thinking. The mid-term review of RSES 2019-2031 is a key opportunity to strengthen the role and responsibilities of regional assemblies in the circular transition.
- **Broaden the role of local authorities in circular economy policy implementation**. This can be done by:
  - **Embedding circularity in Local Economic and Community Plans**, which set out actions to achieve social and economic development objectives at the local level for five-year periods. The revision of these plans for the next five-year period is a key opportunity for local authorities to promote circular infrastructure, housing, commercial and public spaces, as well as to embed circularity within key local economic sectors such as tourism, retail, manufacturing or agriculture.
  - Mandating **local Action Plans for the Circular Economy** via the Circular Economy Bill, as the Climate Action and Low Carbon Development (Amendment) Bill 2021 recently did for local Climate Action Plans.
  - **Broadening spending responsibilities for subnational governments**, which are very limited in Ireland, in the longer run (OECD/UCLG, 2017[8]). This would enable local authorities to play a more important role in funding local circular economy initiatives.

A variety of models to distribute roles and responsibilities in circular economy policy exists in OECD countries (Box 5.1).

Leading by example

Define the conditions for local authorities to lead by example. For example, local authorities can:

- Prevent waste generation in local events, activities and establishments such as schools, for instance, by banning single-use items such as plastic water bottles, cups and cutlery in local events and meetings.
- Increase levels of separate waste collection using bins for recyclables, organics and residual waste in public spaces.
- Apply circular criteria to GPP and test circular business models (e.g. product as a service) rather than systematically opting for ownership, for instance by leasing rather than buying vehicle fleets for local public transport, or by promoting local services with circular business models such as car-sharing among residents.
- Promote the use of secondary materials and products (e.g. showcasing upcycled furniture in public buildings) and construct infrastructure and buildings in a circular manner (see Chapter 2).
- Nominate circular economy "champions" from local businesses and households to raise awareness among peers.

- Support business and community-led circular economy initiatives, with success stories being scaled up to the national level (e.g. Modos).

Box 5.1. Who does what at which level of government on the circular economy?

According to the OECD Survey on the Circular Economy in Cities and Regions (2020), Ministries of the Environment often have a central role in the circular economy. For example, in Chile, Japan and New Zealand, the Ministry of the Environment is the main government body responsible for the circular economy. In other countries, this ministry shares the responsibility with the Ministry of Industry (Colombia and Denmark), the Ministry of the Economy (Italy) or the Federal Ministry of Jobs, Economy and Consumers (Belgium). Local governments generally work in collaboration with state governments under an overarching waste management strategy, although an explicit reference to the circular economy is not always included.

At the regional level, according to respondents of the survey, the circular economy is driven by public environmental organisations, waste management agencies and economic development organisations. The regional governments that answered the OECD survey have allocated the responsibility of guiding the circular transition mainly to: regional councils (North Karelia, Finland, through the Regional Council of North Karelia); publicly funded, not-for-profit environmental organisations (Scotland, United Kingdom [UK], through Zero Waste Scotland); and public waste agencies (Flanders, Belgium, through the Public Waste Agency of Flanders OVAM).

According to the respondents of the OECD survey, the circular economy in cities is led by environmental departments. Beyond environmental departments, respondents flagged responsibilities across economic development and urban planning departments, sustainability and waste management utilities and/or related public agencies. The city council or the central municipal administration also holds responsibilities, as well as innovation area offices and public works departments. In Amsterdam, Netherlands, and Paris, France, the transition is led by urban planning and sustainability areas. In London, UK, this responsibility is assigned to ReLondon (previously the London Waste and Recycling Board, LWARB). The city of Kitakyushu, Japan, has designated the Environmental Industry Promotion Division for the task. In cities, city managers dedicated to the circular economy are flourishing. The increasing importance of the circular economy is visible by the fact that there are specific circular economy managers in cities (e.g. Amsterdam, Netherlands; Brussels, Belgium; Ljubljana, Slovenia; London, UK; Paris, France; and Rotterdam, Netherlands). Circular economy managers are in charge of promoting the setting and implementation of circular strategies, while also building relations with external actors.

Source: OECD (2020[1]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en.

Strategic vision: Implement a circular economy strategy with clear goals and a timeline for action

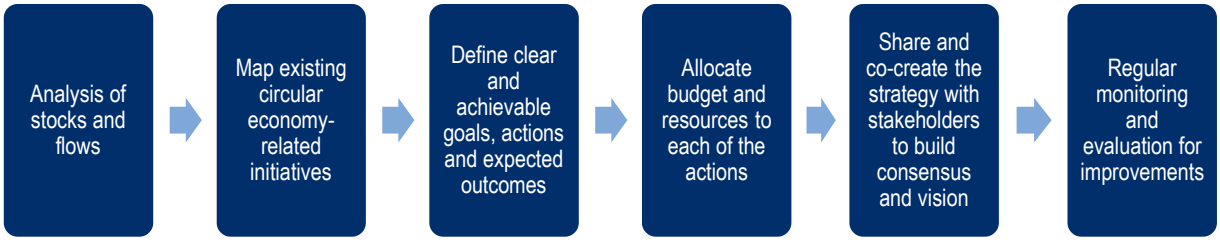
Ireland is at a turning point for the circular economy. This is reflected in the abundance of circular economy policy publications since 2020 and, in particular, the Whole of Government Circular Economy Strategy in December 2021. The Strategy's main objective is to provide the overarching policy framework for the circular economy in Ireland and to promote public sector leadership in circular policies and practices (DECC, 2021[9]). The Strategy further aims to support and implement measures that bring Ireland's circularity rate above the EU average by 2030. It plans to do so by: i) raising awareness of the circular economy among citizens and businesses; ii) supporting and promoting increased investment in the circular

economy; and iii) identifying and addressing the economic, regulatory and social barriers to Ireland's circular transition, which respectively constitute the third, fourth and fifth objectives of the strategy.

As it stands in 2022, the Strategy is at its first iteration. Its statutory status and revision every 18-24 months make it a dynamic tool that can adapt to evolving needs. The second iteration of the Strategy, which will exceptionally be published just one year after the publication of the first strategy around December 2022, should provide a solid foundation for a circular economy policy across levels of government.

Ahead of the Strategy's second iteration, the **DECC should clearly set out a whole-of-government approach that involves policy areas across sectors, as its own title suggests**. As such, it should build on: i) an analysis of stocks and flows; ii) a compelling mapping of existing circular economy-related initiatives; iii) clear objectives, timeline and action; iv) a dedicated budget; v) a shared vision with stakeholders; vi) a monitoring framework for measuring progress and allow changes in the second phase based on evidence on what worked, what did not work and what can be improved (Figure 5.2):

Figure 5.2. Steps for developing a strategic vision for a circular economy



Source: OECD (2020[1]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en.

- **An analysis of stocks and flows**. A scoping exercise for a material flow analysis is planned for the first half of 2022 in the proposed programme of work of the Circular Economy Working Group (Annex 7) within the Strategy. To do so, the working group should involve institutions that are already active in circular economy research across different economic sectors, such as the Environmental Research Institute at University College Cork, to inform the scoping exercise and the analysis itself. Such an analysis would provide a sound evidence base for prioritising sectors (e.g. ahead of the sectoral roadmaps) with high potential for the circular economy transition in Ireland. The national government should provide adequate funds to support universities and research centres involved in this exercise to inform new iterations of the strategy.
- **A map of existing circular economy-related initiatives**. Identifying existing initiatives at the national, regional and local levels in Ireland is crucial to learn from experience and explore cross-sectoral synergies. It also allows national and subnational governments to identify partners for the circular transition. The working group could carry out this exercise building on the economic instruments, initiatives and relevant policies identified in Chapter 2. It can also work with the Rediscovery Centre, which hosts a live circular economy database enabling the mapping of initiatives across Ireland as part of its strategic partnership with the EPA.
- **Clear and achievable objectives, goals, a timeline for action and expected outcomes**. The first iteration of the Strategy contains five objectives, of which just one (to bring Ireland's circularity rate above the EU average by 2030) is measurable and time-bound. To ensure that the Strategy provides a robust basis for circular economy policy in Ireland, the second iteration should:
  - **Consider adding alternative objectives to the circularity rate.** The Strategy's objective to bring the circularity rate above the EU average is by 2030 is measurable and time-bound, which is a good practice in objective-setting. However, the circularity rate should ideally go beyond measuring the share of recycled and recovered materials to also account also for reuse and

repair. The DECC should consider pursuing alternative objectives related to repair, reuse, product lifetime extension, the diversion of waste from landfill and better waste separation among others (see Table 5.2). More broadly, circular economy strategies can pursue climate, economic and innovation-related objectives, among others; Box 5.2 presents examples of objectives contained in circular economy strategies.

  - **Set clear timelines for the achievement of intermediate targets**. Targets and objectives should be expressed in absolute terms (e.g. achieve a 50% increase in the recycling rate of municipal waste by 2030) rather than relative terms (i.e. bringing the Irish circularity rate above the EU average by 2030) to set a clear "finish line" for stakeholders and facilitate tracking progress towards the achievement of the objective.

- **A dedicated budget and resources**. The Strategy should plan and forecast the financial and human resources needed to implement the identified actions. The national government could assess the relevance and potentially replicate national and subnational financial schemes from other countries, including EU funds and subnational funding schemes (see Boxes 5.4 and 5.5).
- **A shared vision with stakeholders**. To build consensus on the circular economy vision and move towards its implementation, all relevant stakeholders should be involved from the inception to the implementation of the Strategy. The public consultation and multi-stakeholder Waste Advisory Group that informed the WAPCE is a good practice in line with international examples. The DECC should extend invitations to the Circular Economy Advisory Group[1] to stakeholders absent from the first advisory group (e.g. from the design community) to promote an economy-wide strategy that goes beyond waste management (see the sub-section on stakeholder engagement below). As the first Strategy does not include the list of stakeholders the DECC plans to invite, the DECC should disclose the membership of the new advisory group before the second iteration of the Strategy, to ensure transparency and make sure all relevant stakeholders contribute to the implementation of the Strategy.
- **Explore the application of circular economy principles to food systems and the built environment,** as discussed in Chapter 3, to design out waste and pollution, maximise resource efficiency and transform waste into resources. In particular:
  - Within the food system, the DECC, the DAFM and the DHLGH could:
    - Map government programmes and price-based and regulatory incentives across the food chain, from production to consumption and disposal, and associated environmental impacts (notably on water resources).
    - Raise awareness of the economic and environmental benefits of regenerative and circular farming practices among farmers via existing government and non-government programmes, such as the Irish Farmers' Association Smart Farming programme.
    - Ramp up efforts on data collection regarding food waste and food loss by strengthening collaboration between the DECC, the EPA, the DAFM and Teagasc, Ireland's agriculture and food development authority.
  - Within the built environment, the DECC could consider working with the DHLGH and the Department of Public Expenditure and Reform (DPER) to:
    - Embed circular economy principles in planning through national (DPER), regional (regional assemblies) and local authorities. The 2017 revision of the National Planning Framework represents a key opportunity to do so.
    - Raise awareness and share knowledge of circular building practices among businesses in collaboration with the Irish Green Building Council.
    - Incentivise circular practices and materials by updating regulation on end-of-waste and by-products, and promoting standards and economic incentives for recycled materials, as well as disincentives for virgin materials.

  - Shift procurement practices from focusing on capital costs to considering life-cycle costs (i.e. operation, maintenance and end-of-life) to favour the uptake of circular and sustainable solutions, and develop circular criteria for the built environment to be included in GPP.

- **Regular monitoring of progress made and impact evaluation**. The national government and the EPA should introduce an effective system monitoring the progress of the Strategy's implementation and evaluating its impacts. Tracking progress is crucial to make adjustments and communicate the results to stakeholders and the public, with a view to maximising buy-in. Indicators can include the following: waste diverted from landfill (tonnes [T]/inhabitant/year or %); carbon dioxide (CO_2) emissions saved (T CO_2/capita or %); virgin material consumption avoided (T/inhabitant/year or %); use of recovered material (T/inhabitant/year or %); energy savings (*kilogram* of oil equivalent [Kgoe]/inhabitant/year or %) and water savings (megalitre [ML]/inhabitant/year or %) (see further examples in sub-section on data and assessment below). The DECC can use the OECD Checklist for Action, which is based on 12 key governance dimensions for promoting, facilitating and enabling the circular economy, to adopt this approach (OECD, 2020[1]).

Table 5.2. Selected indicators for circular economy strategies

Phase	Type of indicator	Indicators for the circular economy strategy: Input, process and output
Setting the strategy	Process	No. of public administrations/departments involved
	Process	No. of stakeholders involved
	Input/process	No. of actions identified to achieve the objectives
	Input/process	No. of projects to implement the actions
	Process	No. of projects financed by the government/Total no. of projects
	Process	No. of projects financed by the private sector/Total no. of projects
	Process	No. of staff employed for the circular economy initiative and implementation within the administration
Implementing the strategy	Environmental output	Waste diverted from landfill (T/inhabitant/year or %)
	Environmental output	By-product or waste reused as material (T/inhabitant/year or %)
	Environmental output	CO_2 emissions saved (T CO_2/capita or %)
	Environmental output	Virgin material use avoided (T/inhabitant/year or %)
	Environmental output	Use of recovered material (T/inhabitant/year or %)
	Environmental output	Energy savings (Kgoe/inhabitant/year or %)
	Environmental output	Water savings (ML/inhabitant/year or %)
	Socio-economic output	No. of new circular business
	Socio-economic output	No. of businesses adopting circular economy principles
	Socio-economic output	Economic benefits (e.g. through additional revenue and costs saving) (EUR/year)
	Socio-economic output	No. of employees in new circular businesses
	Socio-economic output	No. of jobs created in the circular economy
	Governance output	No. of procurement contracts including circular criteria (no. of contracts per year/expenditure per year, %)
	Governance output	No. of companies or employees trained to adopt circular economy principles
	Governance output	No. of contracts awarded that include a circular economy criterion/Total no. of contracts
	Governance output	Percentage of public investment dedicated to circular economy policy/Total public investment

Source: OECD (2020[1]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en.

Box 5.2. Examples of the objectives of circular economy strategies

Circular economy strategies can have multiple objectives, including the promotion of sustainable development, waste reduction, more efficient or optimal use of resources, carbon neutrality, stimulating employment and boosting innovation.

The promotion of **sustainable development** is part of various national circular economy initiatives. It is often related to national and global sustainability agendas such as the United Nations (UN) Agenda 2030 Sustainable Development Goals (SDGs). In the case of Denmark, for example, the circular economy is considered a key step in the government's action plan to contribute to the attainment of all 17 SDGs.

Waste reduction and more efficient resource use are key goals in several strategies. Waste reduction is often the most prominent environmental goal. In the Netherlands, for example, the circular economy strategy envisages an (interim) objective of a 50% reduction in the use of primary raw materials (minerals, fossil and metals) by 2030 and a goal to use and reuse raw materials efficiently without any harmful emissions to the environment by 2050. France aims to: reduce natural resource use due to French consumption by 30% in relation to gross domestic product (GDP) between 2010 and 2030; reduce the amount of non-hazardous waste by 50% between 2010 and 2025; and recycle 100% of plastics by 2021 and, in doing so, avoid 8 million additional tonnes of CO_2 emissions each year. Spain aims to increase the efficiency of water use by 10% and to reduce food waste by 50% per capita at household and retail level and by 20% in production and supply chains from 2020.

Carbon neutrality is also a key part of circular economy strategies. In Scotland, UK, it is estimated that a more circular economy could reduce carbon emissions by 11 million tonnes per year by 2050. The city of Joensuu, Finland, is planning circular economy actions within the ongoing climate programme that aims to transform Joensuu into a carbon-neutral city by 2025. Circular economy is considered as providing one of the most substantial contributions to carbon neutrality in London, UK.

Stimulating employment is one of the aims of several circular economy strategies. Some countries explicitly recognise the employment benefits that a circular economy industry can offer: estimates in France have shown that up to 300 000 additional jobs may be created, in many cases, through the creation of novel professions. The entrepreneurial value of creating a critical mass of new business models and structures as well as infrastructure, with a focus on local production and small- and medium-sized enterprises (SMEs), is explicitly recognised by Colombia and Italy in their respective circular economy strategies.

Circular economy strategies can pave the way for **innovation** and economic benefits. Some projections show the positive economic impact that the circular economy can have (e.g. Colombia, Finland, France, Italy), while innovation and positive social effects are also highlighted by a number of strategies. It is estimated that in Scotland, UK, action across 8 manufacturing sub-sectors could result in annual cost savings of GBP 0.8-1.5 billion. The circular economy strategy of the Autonomous Region of Extremadura, Spain, sees the circular economy as an opportunity to transform industry by attracting both national and international investments, strengthening tourism, ensuring sustainable rural development, land use planning, urban planning and construction, and improving transport networks and services.

Source: OECD (2020[1]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en.

Awareness and transparency: Promote a circular economy culture and enhance trust

Raising awareness among different levels of government, businesses and households is a prerequisite to overcome cultural barriers and increase acceptance of the circular economy. As described in Chapter 3, key players such as businesses, farmers and households have limited awareness and access to knowledge of the circular economy's potential and opportunities. The acceptance issue stems from a lack of awareness but also trust in terms of the quality of reused products and goods.

The Strategy plans to raise awareness by implementing a national circular economy online platform and a national circular economy brand (DECC, 2021[9]). The working group is expected to make proposals for both in consultation with the advisory group, and implementation to be started by the end of 2022. In addition to the platform and brand, the government can consider targeted communication campaigns to raise awareness and promote trust in the circular economy, and other forms of soft regulation (e.g. certificates, labels and nudging).

A national circular economy platform

The online platform can build on the following elements:

- **Stakeholder profiles** for cities, regions, businesses, knowledge institutions and other stakeholders implementing circular economy projects, initiatives and policies in Ireland, highlighting respective strategies, activities and good practices.
- **Circular projects, initiatives, news and events** from Ireland, from a range of economic sectors and involving relevant stakeholders. Projects, including pilots and demonstrations, can provide valuable information on the regulatory, technical and financial dimensions, among others, of circular solutions to be replicated and scaled up. Circular economy events such as conferences, seminars and webinars in Ireland and abroad should also be shared. The DECC should inject existing resources from key circular economy players in Ireland (e.g. EPA, local authorities, universities, CIRCULÉIRE, the Bioeconomy Implementation Group, etc.) and from the Rediscovery Centre, which already has relevant initiatives such as Circular Economy News.
- **Support material** such as reports and guidance, including toolkits for citizens, different business sectors and the public sector for the implementation of circular economy practices and projects in Ireland and at the European level. The European Investment Bank (EIB) *Circular City Funding Guide* is a good example, as it provides structured information and examples of funding schemes and commercial lenders of EU Green Bonds, for fund seekers and donors alike (EIB, 2021[10]).
- **A directory to find rental, repair and second-hand businesses locally**. This section of the platform should be developed in collaboration with local authorities, given their knowledge of local circular economy businesses and initiatives. It should build on the existing platform repairmystuff.ie and could further draw from the design of the *Longue vie aux objets* (Long Life to Objects) platform developed by the French Environmental and Energy Management Agency (ADEME, 2021[11]). The DECC should extensively build on material from existing platforms such as CIRCULÉIRE's Circular Economy Knowledge Library, mywaste.ie, irishbioeconomy.ie and the Rediscovery Centre and CRNI websites.
- **A dashboard showing progress towards predefined circular economy targets**. This data would be collected through a broader information system on the circular economy allowing policy makers to monitor progress towards the achievement of targets, to evaluate and adjust circular economy policies (see the sub-section below on data and assessment). The dashboard on the platform would promote transparency by allowing all interested stakeholders to monitor Ireland's progress towards achieving a circular economy. The targets should be defined within the Strategy (see previous section).

- **National, regional and local contact points for the circular economy** aimed at businesses and citizens.

The online platform could serve as a basis for a broader and integrated awareness-raising initiative with an offline component. The government, EPA and other relevant stakeholders could use it as a launching pad for online and in-person events and meetings, and as an outlet for circular economy policy news, including press releases, newsletters, invitations for stakeholder consultations, etc. A broader communications campaign raising awareness on the circular economy (see below) could also promote the platform as a one-stop-shop for all things circular in Ireland.

Communication campaigns

The DECC and EPA could raise awareness on the circular economy, and notably on the circular economy platform and brand, through a dedicated communication campaign. Dissemination efforts should be tailored to the different needs and interests of businesses and citizens via separate supports.

- For **businesses**, the campaign should focus on: i) the economic benefits of circular business models and practices for businesses; ii) toolkits and guidance for applying circular principles in different sectors, both upstream and downstream; iii) information and support on applying for grants and other sources of funding.
- For **citizens**, the campaign should focus on: i) the economic and environmental benefits of circular practices such as reuse and repair; ii) the directory to find local circular businesses and initiatives such as repair cafés; iii) the dashboard tracking progress towards circular economy targets, to enhance transparency and trust. The campaign should seek to promote acceptance and build trust in second-hand shops, repair initiatives and businesses, upcycling services and other circular businesses.

The DECC should co-ordinate a **harmonisation effort** on circular economy communication across the department, national government, EPA and RWMPOs to maximise synergies and build on existing practices (e.g. from Rediscovery Centre).

Incentives for behavioural change

Incentives for behavioural change such as brands, labels and standards can stimulate behavioural change conducive to the circular economy among businesses and households. In this sense, it is suggested to:

- Develop a **circular economy brand** to raise awareness and build trust in the circular economy. This action is already foreseen for implementation by the end of 2022 under the Strategy, and aims to increase public awareness as well as identify and reward best practice for publicly supported circular initiatives. The DECC should pay particular attention to defining clear and transparent criteria for the brand, creating a level playing field and maximising buy-in.
- Use existing **labels** (e.g. ReMark and Origin Green) to incentivise businesses to produce and distribute according to circular economy principles and enable consumers to make informed consumption decisions, ultimately leading to more circular production and consumption choices. For instance, the French Roadmap for the Circular Economy includes the deployment of voluntary environmental labelling in furnishing, textile, hotels, electronic and food products. It aims to increase the visibility of existing environmental labels, including the European ecolabel and NF Environment (a collective certification label for producers that comply with environmental quality specifications), as well as to develop a quality label for second-hand products. As part of the roadmap, a “repairability index” has been developed and mandated for five categories of appliances and electronic products by the Anti-waste and Circular Economy Law (Ministère de la Transition écologique, 2021[12]).

- Promote the re-engineering of existing **standards** to promote circular design, circular processes and the incorporation of second-hand material across sectors. Standards can support producer and consumer confidence in circular products and materials, facilitating their wider adoption. They have a key role to play in embedding circular design in procurement and markets under "business as usual" and creating a market for second life assets. As such, government departments that set standards (e.g. DETE and DoT) have a key role to play in standardising a circular approach. The government can promote the incorporation of circularity in current standards by dedicating resources for standard-setters, including the National Standards Authority of Ireland (NSAI) and government departments and agencies that set standards.

Facilitator

As a facilitator of the circular economy, the government of Ireland can: i) implement effective multi-level governance co-ordination; ii) enhance policy coherence by fostering systemic thinking across government; iii) involve a broader range of stakeholders to take circular economy policy beyond waste management; and iv) adopt a functional approach to identify the appropriate scale for action and take advantage of territorial specificities.

Co-ordination: Implement effective multi-level governance

Co-ordination among different levels of government is crucial to address common circular economy-related issues, align objectives, avoid a lack of information, asymmetries and inefficient duplications (OECD, 2020[1]). Co-ordination mechanisms include:

- Co-ordination bodies such as committees, commissions, working groups and task forces.
- Meetings, joint circular economy projects.
- Shared databases and information systems.
- Contracts or deals as tools for dialogue, experimenting, empowering and learning.

The Circular Economy Working Group and the EPA Circular Economy Programme are the two main co-ordination mechanisms for circular economy policy in Ireland under the strategy (DECC, 2021[9]). The DECC-chaired working group, which is being established following the Strategy's publication in December 2021, is intended as a horizontal mechanism to co-ordinate across "priority" government departments, according to the Strategy. The EPA-led programme is a vertical co-ordination mechanism to support the DECC's Circular Economy Unit in overseeing national, regional and local activities, to improve coherence and alignment of national and local activities.

To further facilitate horizontal co-ordination, it is suggested to:

- Activate the **inter-departmental Circular Economy Working Group** to identify how circular economy principles can be applied to different sectoral policies to reduce waste, improve resource efficiency, create jobs and improve access to services. As a priority, the DECC should publish the final terms of reference for the working group, including the list of government departments and agencies involved. Over time, the DECC can consider inviting additional departments to join, as was the case for the inter-ministerial commission for the Spanish Circular Economy Strategy (see Box 5.3). The group can:
  - **Map policies, targets, legislation, regulations, incentives and initiatives relative to the circular economy**, to better understand current incentives, disincentives and barriers to the circular economy in the policy landscape and take action to remedy the issues identified. More suggestions relative to mapping can be found in the sub-section above on strategic vision.

  - Mandate that all government bodies draw up and implement **circular action plans**, building on the existing Resource Efficiency Action Plans that are required across all government bodies (DECC, 2021[13]). These action plans should set clear, time-bound objectives to be achieved with predefined resources, to ensure accountability across government departments. Transport Infrastructure Ireland (TII) is currently developing a Circular Economy Plan that could serve as a benchmark for other government department or agency strategies.
- **Co-ordinate with the DETE** to foster the circular economy as an economic agenda, rather than a resource efficiency and waste minimisation tool, across government departments. Co-ordination between the DECC and DETE can be project-based: for instance, the departments can instigate a joint assessment of the potential for the circular economy in Ireland in terms of value-added and job creation. This could further help to build cross-governmental consensus on the circular economy as well as momentum.
- Co-ordinate with **government departments and agencies setting standards**, notably the DETE, NSAI, DoT and TII, by setting up regular (e.g. monthly) meetings with the DECC.
- At the subnational level, **enhance co-ordination** between regional and local offices, for instance between RWMPOs, Climate Action Regional Offices (CAROs), local authorities and Local Enterprise Office (LEO) staff. Such co-ordination can be project-based and build on existing initiatives that explore the economic and enterprise opportunities stemming from climate action (CARO, 2021[14]).

To facilitate vertical co-ordination, online meetings should continue to be favoured where relevant, to limit the resource intensity of meetings and thus increase local authority participation in circular economy policy. The following actions are suggested:

- Establish formal **co-ordination mechanisms between local authorities and the DECC and EPA** respectively, which build on current initiatives such as the Local Authority Prevention Network (LAPN) but going beyond the focus on waste. While co-ordination mechanisms exist between local authorities and the EPA (e.g. LAPN), and between the EPA and DECC (e.g. Oversight Agreement), vertical co-ordination mechanisms between the DECC and local authorities beyond current quarterly waste prevention meetings are lacking. New mechanisms could include meetings, co-ordination bodies and reporting on the local achievement of national targets (as in the Climate Action Plan, CAP).
- Adapt and extend current **regional waste management planning co-ordination mechanisms** between the DECC, the EPA and local authorities, such as Regional Steering Committees and Regional Operations and Task Groups to the circular economy. Similar mechanisms for the circular economy at large or sectors with high circular potential could also be implemented with relevant players.

Box 5.3. The inter-ministerial commission for the Circular Economy Strategy, Spain

The Spanish Circular Economy Strategy (España Circular 2030) was jointly promoted in 2018 by the Ministry of Agriculture and Fisheries, Food and the Environment, and the Ministry of Economy, Industry and Competitiveness. An inter-ministerial commission formed by nine ministries and the Economic Office of the President at that time contributed to it, together with the Autonomous Communities and the Spanish Federation of Municipalities and Provinces (FEMP). After the November 2019 election, the inter-ministerial committee added new ministries (e.g. the Ministry of Education and Vocational Training) to the nine existing members.

The current ministries taking part in the inter-ministerial commission are:

- The Ministry of Agriculture, Fisheries and Food.
- The Ministry for Ecological Transition and the Demographic Challenge.
- The Ministry of Economic Affairs and Digital Transformation.
- The Ministry of Education and Vocational Training.
- The Ministry of Finance.
- The Ministry of Health.
- The Ministry of Industry, Trade and Tourism.
- The Ministry of the Interior.
- The Ministry of Labour and Social Economy.
- The Ministry of Presidency, Relations with Parliament and Democratic Memory.
- The Ministry of Science and Innovation.
- The Ministry of Territorial Policy and Civil Service.
- The Ministry of Transport, Mobility and Urban Agenda.
- The Ministry of Universities.

The inter-ministerial commission will continue to meet at least once a year to evaluate and monitor the implementation of the national strategy. The inter-ministerial commission created a working group for autonomous regions responsible for forming other working groups to further implement the strategy.

The Spanish strategy on the Circular Economy was approved in June 2020 by the Council of Ministers. The strategy is one of the key elements of the Circular Economy Framework (*Marco de Economía Circular*), one of the government's projects that aims to be a lever for economic recovery after the COVID-19 health crisis. The adoption of the Spanish Circular Economy Strategy was foreseen by the Declaration of Climate and Environmental Emergency approved in January 2020, making it one of the priority lines of action and is consistent with the draft bill on Climate Change and Energy Transition, which sets the goal of achieving climate neutrality by 2050.

In addition, on 2 June 2020, the Council of Ministers approved the draft bill on Waste and Contaminated Soils, which addresses the challenge of single-use plastics among other items, and a Royal Decree to improve the traceability and control of waste shipments.

Source: Government of Spain (n.d.[15]), *España Circular 2030, Estrategia Española de Economía Circular*, https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/economia-circular/espanacircular2030_def1_tcm30-509532.PDF; OECD (2020[3]), *The Circular Economy in Valladolid, Spain*, https://doi.org/10.1787/95b1d56e-en.

Policy coherence: Foster system thinking

The systemic change underlying the circular economy transition requires strong integration across often siloed policies (e.g. environment, regional development, agriculture, industry and enterprise) (OECD, 2020[1]). This calls for embedding circular principles into sectoral policies, plans and programmes. The Strategy recognises the importance of policy coherence and states that further work will be carried out to enhance coherence. To facilitate policy coherence, the DECC should strengthen high-level engagement with relevant government departments to ensure that synergies between the circular economy and sectoral strategies are identified and leveraged and that the circular economy is viewed by other government actors as an economic agenda rather than a resource efficiency and waste minimisation tool.

As such, it is suggested to:

- Strengthen policy integration between the **circular economy and climate change agendas**. There is room to further embed the circular economy in the next CAP as a means of achieving economy-wide emission reductions. Stronger integration of the circular economy within climate mitigation policy is needed before the end of 2023, when the latest iteration of the CAP and the Strategy should be published. This could entail embedding the circular economy within existing climate co-ordination mechanisms, such as reporting on the local achievement of national targets. At the subnational level, the DECC could facilitate strengthened co-operation between the CAROs and RWMPOs.
- Embed **circularity in spatial and economic planning** in Ireland via the National Planning Framework (NPF) ahead of the review of the NPF in 2027, which represents a crucial opportunity to integrate the circular economy into Ireland's territorial, economic, social environmental and cultural planning.
- Build the circular economy into Ireland's **Enterprise strategy** as a driver of employment, sustainability and resilience. The review of Enterprise 2025 in 2018 (DBEI, 2018[16]) placed a strong emphasis on resilience and sustainability, which are likely to remain relevant with Ireland's commitment to net-zero, Brexit and the pandemic. As such, the review of Ireland's ten-year Enterprise strategy can serve as an entry point for the circular economy to become a pillar of Ireland's future sustainable and climate-compatible growth, job creation and resilience. This exercise can build on enhanced DECC-DETE co-ordination, notably a prior assessment of the potential of the circular economy for Irish value-added and job creation (see previous section).
- Enhance policy coherence and highlight the benefits of circular practices in **water, agriculture and the bioeconomy**. The government should consider setting up circular economy demonstration projects between the EPA and other related agencies, for instance on circular wastewater treatment with Irish Water, or circular agriculture and circular bioeconomy with the DAFM or Teagasc. These demonstration projects would provide data and insights into the benefits and challenges of circular practices, building momentum for heightened and longer-term policy integration. The Circular Economy Working Group and the Bioeconomy Implementation Group[2] can work together to enhance policy coherence between the circular and the bioeconomy, to leverage synergies and avoid overlaps.

Stakeholder engagement: Involve a broad range of stakeholders to move beyond waste management

The circular economy calls for a systemic change requiring all stakeholders from the public and private sector, citizens, knowledge institutions and non-governmental organisations (NGOs) to play a role (OECD, 2020[1]). Beyond public participation, stakeholder engagement "encompasses different levels of governments (multi-level governance), the private sector, regulators, service providers, donor agencies, investors, civil society in its different forms (e.g. citizens, non-governmental organisations, users' movements, etc.) and other relevant constituencies" (OECD, 2015[2]).

Formal stakeholder engagement mechanisms are essential to inform circular economy policy making. The Waste Advisory Group, whose inputs fed into the WAPCE, is a good example of stakeholder engagement going beyond consultations. The DECC has invited members of the Waste Advisory Group[3] to join the Circular Economy Advisory Group as part of the Strategy and plans to invite new members to "provide balanced representation across all sectors of the Circular Economy" (DECC, 2021[9]).

To overcome the legacy focus on waste management, the DECC can focus on (further) engaging with relevant constituencies that were not part of the Waste Advisory Group, in particular:

- **Local authorities**, on an individual basis or through the LAPN. Local authorities have a key role to play in both implementing and informing circular economy policy, given their knowledge of local circular economy businesses and initiatives, and their competencies in policy areas relevant to the circular economy including planning, local and community development, and supporting local economic development and enterprise. The DECC should also consider engaging with **LEOs** through the DETE to gain insights into the needs and constraints of local SMEs with respect to the circular economy.
- The **research community** (notably universities, research centres and universities and institutes of technology), on both technical and non-technical dimensions of the circular economy transition. Beyond national frameworks for research prioritisation (i.e. DETE Research Prioritisation) and research programming (e.g. EPA Research 2030 ten-year high-level framework), there is little co-ordination between research and policy making on the circular economy. Formal engagement with the research community is needed to bridge the knowledge-policy gap in the circular economy. Beyond inclusion in the Circular Economy Advisory Group, the DECC and EPA should consider further stakeholder engagement mechanisms to ensure that research feeds into national circular economy policy making (e.g. an annual forum or a research-focused day within the Circular Economy Conference). This could also be done, for instance, by mandating that projects funded by research grants include short policy briefs highlighting the main policy implications of research results.
- The **design community** across sectors, from fashion and product designers to architects, through organisations such as the Design & Crafts Council Ireland, the Royal Institute of the Architects of Ireland and the National College of Art and Design. The design community should be formally engaged in circular economy policy making to provide insights into ecodesign regulations and to ensure that higher education programmes (e.g. industrial design, engineering) and training are adequately designed to build in ecodesign skills.
- Irish **standard setters**, notably the NSAI, DETE and TII, to provide insights into the re-engineering and creation of new standards for the circular economy (see sub-section on awareness and transparency).
- Irish **trade associations**, notably Chambers Ireland and Ibec and their member associations, to gain insights on the implications of the circular economy for workers and businesses, and to co-design adequate upskilling and training programmes for the circular economy across different sectors.

Appropriate scale: Adopt a functional approach to leverage territorial specificities

Adopting a functional approach to policy making that transcends administrative boundaries is important for the circular economy (OECD, 2020[1]). Flows of material, goods and people do not stop at administrative boundaries. By looking at the "functions" of local authorities and regions rather than their administrative boundaries, Irish circular economy policy can better address local issues and leverage local potential for the circular economy. In practice, this involves implementing and learning from circular initiatives at various scales, from the micro to the macro level (see Chapter 2).

The shift to a circular economy can strengthen urban-rural linkages in Ireland, where 75% of the territory is farmland and 40% of the population live in the capital city Dublin. Farmers' markets, co-operative stores in cities and towns, neighbour food distribution networks and community-supported agriculture are already well-established in Ireland and contribute to narrowing food loops. Incipient projects also contribute to enhancing urban-rural synergies, such as CircBioCityWaste, which transforms biological waste from urban areas into agricultural fertiliser.

Additionally, a range of circular economy initiatives are in place at different scales in Ireland. Micro-level circular initiatives take place on university campuses (e.g. Green Campus); local authorities implement and support circular economy initiatives and businesses (e.g. Plastic Free Roscommon and repairmystuff.ie); and a regional circular bioeconomy cluster gathers industry, businesses, government and research centres on marine, agriculture and waste-to-value (Circular Bioeconomy Cluster South-West). Circular initiatives at different scales can be highly instructive for circular economy policy making provided a framework is in place to collect and analyse data, provide insights and ensure lessons learned inform circular economy policy and are disseminated among relevant stakeholders (e.g. farmers).

To leverage territorial specificities for the circular economy, the DECC can provide a framework for **setting up circular initiatives at different scales**, transcending administrative boundaries. This should include information and guidance (notably via the national circular economy platform), funding and spaces for dialogue, for instance between urban and rural areas. The results of circular initiatives should feed back into circular economy policy making by collecting data through standardised forms. Aggregated insights could be shared on the platform periodically (e.g. annually). Institutions with relevant experience and knowledge (e.g. Munster Technological University and the Rediscovery Centre) could inform and co-create the framework with the DECC. Under this framework, the DECC can leverage the strengths and experience of different actors:

- The DECC can facilitate **local demonstration projects by supporting alignment with national policy, providing funding and enhancing co-ordination among key local players, as foreseen by the Strategy**. Local authorities can foster experimentations in neighbourhoods that transform local bioresources (e.g. food waste) into compost, create repair workshops (e.g. for bicycles) and facilities to reuse objects easily (e.g. through reuse centres) among other initiatives.
  - To do so, the DECC can build on early insights from EPA-supported Demonstration Hubs, targeted and time-bound projects to demonstrate circular economy actions at the county scale, which will be based on "an open sharing of learnings" (EPA, 2021[17]). The DECC should co-ordinate with the EPA to ensure the coherence of Demonstration Hubs within the framework as well as data collection and insights for national circular economy policy and businesses.
  - The DECC can also get inspiration from international experience. For instance, the Urban Lab in Paris, France, has supported more than 200 experiments since 2010 and consolidated a methodology to support effective experimentation in 4 main stages: i) definition of the experimental project and its evaluation; ii) search for the experimental site; iii) deployment of experimentation; and iv) evaluation and transformation. To facilitate access to these experimental sites, the Urban Lab is based on a legal framework that has been in place for over ten years, including a public space occupancy agreement and a legal framework (OECD, 2020[1]).
- The DECC can facilitate **local and regional industrial symbiosis and clusters**, where appropriate and possible, building on the experience of the existing Circular Bioeconomy Cluster South-West and considering the costs and benefits of the operation.

Enabler

As an enabler of the circular economy, national and local governments can: i) adapt and update the legislative framework and regulatory instruments to create an enabling environment for the transition to the circular economy; ii) make the fiscal framework fit for the circular economy, and mobilise and efficiently allocate financial resources for circular economy initiatives; iii) build capacity on the circular economy across all levels of government; iv) support business development; and v) and create a national circular economy information system to support circular economy policy-making decisions.

Regulation: Make the legislative and regulatory framework conducive to the circular economy

Regulatory framework

The transition to the circular economy requires a paradigm shift in legislation and regulation. A legislative framework conducive to the circular economy should incentivise circular business models and practices across the economy, so that circularity becomes the norm while making linear models increasingly unattractive economically. As part of this overarching framework, the circular economy requires conducive regulation in key sectors such as waste, food and construction (see Chapter 2). Identifying available tools (such as land use requirements), environmental permits (e.g. for decentralised water, waste and energy systems) and regulation for pilot projects (e.g. sandbox regulatory approaches) would help to clarify regulatory uncertainties, gaps and future needs across different entities (OECD, 2020[1]).

Ireland is expected to have a legislative framework for the circular economy by early 2022. The Circular Economy Bill will provide the legal foundation for measures set out in the WAPCE, give the Strategy and the Programme statutory status and amend the Waste Management Act (1996). In December 2020, the Joint Committee on Environment and Climate Action published the *Report on the Pre-Legislative Scrutiny of the Circular Economy Bill 2021* (2021[18]). The committee notably recommends strengthening and clarifying the language of the bill, including extending the definition of the circular economy beyond waste and setting out clear targets and responsibilities, which are currently lacking.

Under this new legislative framework, the DECC can:

- Set up a regulatory framework conducive to **ecodesign, repair, reuse and remanufacturing**. Ecodesign regulations should go beyond energy efficiency and consider material inputs more broadly (Ekins et al., 2019[19]). In this vein, the European Commission (EC) has several initiatives underway to improve the reparability and extend the useful life of products, including legislation on the right to repair, a sustainable products initiative and design requirements for electronics, among others (European Parliament, 2022[20]).
- Streamline regulatory processes for reusing material considered as waste through **end-of-waste and by-product processes**. This can be done by shifting towards more performance-based or outcome-based regulation, which specifies the required outcomes or objectives of regulation, rather than process-based regulation, which specifies the means by which regulatory objectives must be achieved. As suggested in the WAPCE, local authorities can take on more responsibilities in end-of-waste applications and by-product notifications. This might support the identification of local opportunities regarding bioeconomy by-products, which is a key action in the National Policy Statement on the Bioeconomy. The fees charged to operators notifying by-products or end-of-waste applications anticipated in the WAPCE should not be set so high as to discourage operators from applying in the first place.
- **Broaden extended producer responsibility (EPR)** to new waste streams and **improve existing EPR schemes** to favour reuse. According to OECD guidance on EPR, the main issues to consider for the design and governance of EPR schemes relate to: setting and periodically reviewing targets; enforcing EPR obligations (e.g. with registers of producers and appropriate sanctions); resourcing monitoring systems adequately; addressing free-riding (via enforcement and peer pressure); and managing risks such as price volatility and leakage to ensure sustainable funding (OECD, 2016[21]).

Local authorities can also leverage their potential for the circular transition within existing frameworks and as part of the Circular Economy Prevention Network, the new LAPN under the EPA's programme. As the authorities responsible for overseeing planning permission, local authorities could mandate Resource and Waste Management Plans, which are currently recommended on a voluntary basis (EPA, 2021[22]), for all construction and demolition projects. In London, UK, for instance, the London Plan 2021 requires all

referable developments to submit a Circular Economy Statement with their planning application (London City Hall, 2021[23]). The city is working on guidance for developers, to cover the whole life cycle of development.

Public procurement

In Ireland, the Office of Government Procurement (OGP), which sits under the Department of Public Expenditure and Reform (DPER), is responsible for sourcing goods and services for the public sector. The Department of the Environment, Climate and Communications (DECC) has recognised the strategic importance of GPP with circular economy criteria, which should be further developed and applied, including at the local authority level. The Strategy highlights close collaboration between the DECC, OGP and EPA with respect to GPP. The commitment to implement GPP in all tenders using public funds by 2023 is a step in the right direction.

Following on from this, it is suggested to:

- Work with the OGP to ensure that **circular criteria** are included alongside green criteria in GPP. The DECC could aim to ensure that this is the case by the time GPP in tenders using public funds becomes mandatory in 2023.
- **Shift away from the systematic application of the lowest-price criterion** for awarding procurement contracts, as part of a broader shift to GPP that systematically considers the life cycle costs and environmental impacts of goods (i.e. from extraction to operation, maintenance and end of life). To standardise this process, the government can consider using Environmental Product Declarations to enable comparisons between tenders in terms of environmental and carbon footprint (ISO, 2006[24]). According to the OECD (2015[25]), successful GPP requires: a solid legal and policy framework for purchasing entities; planning GPP (understanding market capacity, available technical solutions and GPP costs and benefits); introducing environmental standards in technical specifications, procurement selection, award criteria and contract performance clauses; professionalising GPP; raising awareness on GPP benefits; and monitoring results and providing feedback on policy and regulation.
- Strengthen support for **SMEs to participate in tenders**. This can be done by providing "clear guidance to inform buyers' expectations (including specifications and contract as well as payment terms) and binding information about evaluation and award criteria and their weights (whether they are focused specifically on price, include elements of price/quality ratio or support secondary policy objectives)", as argued by the OECD Recommendation of the Council on Public Procurement (OECD, 2015[26]). The EPA could also consider providing guidance for suppliers on GPP as it does for the public sector. Tendered contracts can also be divided into lots to encourage SMEs and self-employed workers to participate. For instance, Austria's Action Plan on Public Procurement Promoting Innovation calls on authorities to procure lots and to define qualification and award criteria that give more opportunities to SMEs to take part in tendering processes.

Financing and behavioural change: Use fiscal and economic tools to incentivise the transition to a circular economy and ensure adequate funding

The transition to a circular economy requires renewal in the taxation of emissions and natural resource consumption, the removal of environmentally harmful subsidies and the redirection of tax incomes towards lighter taxation of employment and entrepreneurship (Wijkman et al., 2019[27]). The OECD (2016[28]) suggests applying mixes of economic instruments to ensure a coherent set of incentives for resource efficiency along the product value chain. Price-based tools include: environmentally-related taxes, fees and charges, which increase the cost of extractive or polluting activities; tradeable permits, which are used to allocate emissions or resource exploitation rights; and EPR policy instruments that extend a producer's responsibility for a product to the end of life stage, including Deposit Refund Schemes (DRS) in which an

initial payment (deposit) is made by a customer at the point of purchase that is then refunded if the product or packaging is physically returned by the customer to the collection scheme (OECD, 2020[1]).

One of the Strategy's key objectives is to support and promote increased investment in the circular economy. However, investment in the circular economy should be considered as part of the wider economic landscape in which businesses operate, which includes all fiscal and economic barriers and incentives. As such, the DECC can consider action on three main fronts: fiscal and economic tools to incentivise the circular economy, government funding for the circular economy and supporting private investment in the circular economy.

Fiscal and economic tools

The WAPCE considers several price-based tools to incentivise a circular economy, from the "latte levy" in the short term to incentives for recycled materials in the longer run. These measures are a step in the right direction but more clarity on their application is needed to provide certainty for businesses and consumers and support acceptance. Furthermore, the scope of these waste-focused measures can be broadened. As such, the government can consider the following actions:

- **Broaden the scope of price-based tools** considered in the WAPCE and provide clarity on the timeline for their implementation. The DECC can consider EPR fee eco-modulation, based on detailed product design criteria like recycled content, which can provide producers with stronger design incentives. The DECC can also extend the DRS to glass bottles in addition to the current coverage of aluminium cans and plastic bottles. Another option could be to base coverage of the DRS on products rather than materials. Product-based coverage can help avoid unwanted substitution effects that can occur with material-based DRS policies, whereby producers shift towards exempted materials. In several OECD countries, DRS policies identify a type of product (e.g. for beverage containers) and detail exemptions for particular types of this product category (OECD, forthcoming[29]).
- **Review and adjust environmental subsidies**, to reward circularity and discourage waste. This involves identifying both environmentally beneficial and harmful subsidies. Environmentally motivated subsidies can encourage increased material productivity, reuse and recycling (OECD, 2021[30]). Once identified, environmentally harmful subsidies preventing the application of the waste hierarchy should be progressively removed with a clear timeline.
- **Review and adjust environmentally-related taxes** in the same vein. Environmental taxes can be extended by increasing the rate of existing levies and taxes (e.g. landfill levy, carbon tax) and broadening the scope of materials, products and activities concerned. These taxes, which are widespread in OECD economies, deter the consumption and production of targeted goods and services by making them more expensive. As consumers and businesses seek new, cleaner solutions in response to the price of pollution, investing in more sustainable technologies and products becomes more commercially attractive (OECD, 2020[1]). On the other hand, tax breaks can be introduced for activities supporting desirable outcomes such as waste prevention. Sweden, for example, has introduced tax breaks on repairs for consumer goods, effectively halving the tax rate (Sutherland, 2020[31]).
- In the longer term, consider a broader **shift of the tax burden from direct sources such as labour to indirect sources** such as consumption or pollution, which the OECD has identified as a priority for ensuring long-term growth (OECD, 2018[32]). This would favour sustainable production and consumption models, including the circular economy.

Government funding

The DECC should set up a **clear funding framework for the circular economy that fosters both public and private investment.** Many government or government-supported funding initiatives for the circular economy are already in place but their interaction with private funding is unclear.

Ahead of the next iteration of the Strategy, the DECC could consider defining a funding framework for the circular economy in Ireland. This would involve:

- Ensuring that **adequate levels of funding** are in place to support circular economy policy objectives and the projects that are needed to achieve them. Under the draft Circular Economy Bill, the objectives of the Circular Economy Fund (replacing the existing Environment Fund) are intended to align more closely with those of the circular economy. It is essential to consider that the fund's income will depend on the successful implementation of the levies foreseen in the WAPCE, notably the "latte levy" and the waste recovery levy in the short term.
- Assisting local authorities and the Local Authority Prevention Network (LAPN) in supporting and scaling up small-scale circular initiatives, as has been the case with Modos for example (see Chapter 2), by setting up dedicated **local funding schemes**. For example, the venture capital fund Circular Economy Business Support Programme introduced by ReLondon (previously the London Waste and Recycling Board) in the UK supports the scaling up of circular economy SMEs already in the market.
- Fostering private investment in the circular economy with **alternative funding methods**. These include crowdfunding, leasing, equity participation, grants, loan guarantees, green bonds and loans for circular economy projects and businesses (Box 5.4). For instance, there is scope to extend the application of the EU Green Bond framework in Ireland to the circular economy, as this is not currently the case, despite the circular economy being one of the EU taxonomy's headlines.
- **Leveraging EU funds** such as LIFE and Horizon Europe for circular economy projects (see Box 5.5).

Box 5.4. Use and examples of funding instruments for the circular economy

Several alternative funding instruments can be considered for circular economy projects and ventures.

- Funding mechanisms such as **crowdfunding and leasing** can be used for research and development (R&D) projects characterised by pre-revenue cash flow and very high investment risk. Crowdfunding is also used to support the setting up of one-off community projects with high initial investment and low expenditure or the opportunity to generate income to cover those expenses thereafter. Oneplanetcrowd and Lita are examples of crowdfunding platforms for social and environmental projects.
- **Equity financing** can be applied to: R&D projects with pre-revenue cash flow and very high investment risk; start-up projects with pre-profit cash flow and very high investment risk; scale-up projects, with pre-profit to profit cash flow and high investment risk; and growth projects with profit cash flow and medium investment risk. Examples of publicly supported equity are the EIB Venture Debt service, which provides a long-term venture debt product for fast-growing innovative companies, and InvestEU, a new EU investment programme aimed at boosting the European economy in specific areas including the circular economy water, waste and environmental infrastructure. InvestEU also provides guarantees and advisory services. Initiatives such as the European Angels Fund (EAF) advised by the European Investment Fund (EIF) provide equity to business angels and other non-institutional investors to finance innovative companies in the form of co-investments.

- **Grants** can be used to finance R&D projects and start-up projects. Examples of grants at the EU level include Horizon Europe, the EU research and innovation programme for 2021-27, and the EU Innovation Fund with revenue from EU Emission Trading System (ETS) credits, which aims to finance the demonstration of innovative low-carbon technologies from 2020 to 2030. Grants can be also introduced at the national and local scales. For example, the Danish Ecoinnovation subsidy scheme is a national subsidy scheme with a general focus on water, circular economy and waste recycling, the environmental performance of the industry and sustainable construction, among others. In Scotland, the Circular Economy Investment Fund provides GBP 18 million in grant funding annually to SMEs to increase the circularity of their business models.
- Providing **guarantees** can also help R&D and start-up projects gain access to private loans. For instance, COSME's Loan Guarantee Facility (COSME-LGF), the EU programme for the Competitiveness of Enterprises and SMEs, provide guarantees and counter-guarantees to financial intermediaries such as banks and leasing companies to provide more loan and lease financing to SMEs.
- **Debt** can be leveraged to finance scale-up projects, growth projects and mature projects with a post-profit cash flow and a lower investment risk. The Joint Initiative on Circular Economy (JICE), for example, is an initiative launched by the EIB and the EU's largest national promotional banks and institutions to accelerate the transition to a sustainable and circular economy. It targets an investment of at least EUR 10 billion over the 2019-30 period. Several commercial banks are also active in investing in promising circular initiatives. For example, in 2019, Intesa San Paolo, Italy, invested EUR 2.2 billion (3.7% of all group loans) in green and circular economy investments. Public authorities, including cities, can also issue green bonds and reinvest revenue in circular economy projects. For example, the cities of Gothenburg, Sweden, and Paris, France, issue green bonds.

Table 5.3 summarises respective funding options according to project types (R&D, start-up, scale-up, growth and mature) and their cash flow characteristics and risk assessment.

Table 5.3. Funding types and their use for financing the circular economy

Organisation or project type	Cash flow characteristics/risk assessment	Funding options
R&D	Pre-revenue/ Very high risk	Alternative funding (such as crowdfunding and leasing), equity, grants, guarantees
Start-up	Pre-profit/ Very high risk	Equity, grants, guarantees
Scale-up	Pre-profit to profit/ High risk	Equity, debt
Growth	Profit/ Medium risk	Equity, debt
Mature	Profit/ Low risk	Debt

Source: EIB (2021[33]), *National and Local Grants and Subsidies*, https://www.circularcityfundingguide.eu/funding-types-and-their-applicability/grants-and-subsidies/national-and-local-grants-and-subsidies/ (accessed on 8 August 2021).

Box 5.5. Examples of EU funds to finance the implementation of a circular economy in Ireland

Several EU funds include a circular economy dimension and could be leveraged for the circular economy transition in Ireland. For example:

- The LIFE Programme, created in 1992, co-finances projects to demonstrate solutions tackling environmental and climate challenges. It includes two sub-programmes: LIFE Environment, with a focus on the circular economy, and LIFE Climate Action for projects on climate mitigation, adaptation and climate governance and information. In Ireland, the DECC is the national contact point for LIFE.
- Horizon Europe is the 2021-27 EU funding programme for research and innovation with a budget of EUR 95.5 billion. Cluster 6 of Horizon Europe includes the areas of intervention on circular systems, bio-based innovation systems and food systems.
- The InvestEU Programme is an EU fund focusing on investment, innovation and job creation in Europe over the 2021-27 period. It aims to support a sustainable recovery for a greener, more digital and more resilient European economy.
- INTERREG: European Territorial Co-operation (ETC) is an EU funding instrument stimulating cross-border co-operation. The instrument support EU countries in identifying joint solutions to tackle challenges related to the environment, health, research, education, sustainable energy and transport, among others.
- URBACT III is an EU fund supporting cities in improving their capacity to deliver, design and implement sustainable policies and to build and share knowledge. URBACT III includes a specific webpage on circular economy.
- The Urban Innovative Actions (UIA) programme, funded by the European Regional Development Fund (ERDF), aims to test innovative solutions addressing urban challenges in European cities. The programme has already funded several projects on the urban circular economy, for example in Antwerp (Belgium), Lappeenranta (Finland) and Sevran (France).
- The Emission Trading System Innovation Fund, which is funded by EU Emission Trading System (ETS) credits, aims to support the demonstration of innovative low-carbon technologies between 2020 and 2030. The fund is based on calls for large- and small-scale projects focusing on innovative low-carbon technologies and processes in energy-intensive industries, carbon capture and utilisation (CCU), construction and operation of carbon capture and storage (CCS), innovative renewable energy generation and energy storage.
- The European Circular Bioeconomy Fund (ECBF), an initiative of the EIB and EC, aims at investing in late-stage circular bioeconomy companies. It is the first venture fund focused on the bioeconomy and circular bioeconomy in Europe, with a target size of EUR 250 million. The ECBF gives priority to circular areas such as the conversion of biological resources and waste streams into value-added products.
- The Bio-based Industries Joint Undertaking (BBI JU) is the EUR 3.7 billion partnership between the EU and the Bio-based Industries Consortium. It publishes and manages annual calls for proposals on research and innovation on bio-based value chains.
- The EIB offers medium- and long-term loans for large-scale circular economy projects and indirect financing through local banks and other agents for smaller projects, as well as indirect financing through EU Green Bonds, increasing the accessibility to local banks and other agents for smaller projects.

Source: EIB (2021[33]), *National and Local Grants and Subsidies*, https://www.circularcityfundingguide.eu/funding-types-and-their-applicability/grants-and-subsidies/national-and-local-grants-and-subsidies/ (accessed on 8 August 2021); EIB (2022[34]), *Homepage*, https://www.eib.org/en/index.htm (accessed on 2 March 2022).

Capacity building: Adapt human and technical resources to the challenges at hand

Capacity-building programmes for the circular economy should address government stakeholders on the one hand, to build knowledge and skills for circular economy policy making and implementation, and businesses and civil society on the other, to raise awareness, build relevant skills and knowledge, and catalyse business opportunities.

Capacity building for government

Many circular economy capacity-building initiatives for government are in place but most of them focus on GPP and target local authorities. All levels of government should engage in capacity-building programmes to build the knowledge and skills required for circular economy policy making and implementation, starting with the leading department and unit.

The DECC and the Circular Economy Unit should **take part in capacity-building programmes for circular economy policy making** to enable them to effectively lead the circular transition across sectors, beyond waste. Given that the Circular Economy Unit is born out of the waste management environment, it would benefit from capacity building to support a broader vision for circular economy policy. The capacity-building programme for the DECC could also include a component on circular criteria for GPP.

Regarding local authorities, the following actions can be considered:

- Design and implement **capacity-building programmes for local authorities** to favour a shift from litter and waste management to resources management and circular economy. The EPA is already strengthening local authority capacity by building on existing networks, notably by working with local authorities and the City and County Managers Association to extend the capacity-building role of the LAPN to the circular economy as part of the programme. If **LEOs** across the 31 local authorities are to act as a single window for circular entrepreneurs and businesses, an adequate capacity-building programme for LEO staff should also be rolled out nationwide.
- Promote a **culture of excellence** and of “learning by doing” among local authorities. The government can build momentum for the strategy by: establishing the circular economy as a national priority; setting clear objectives, targets and reporting at the national and local levels (e.g. reporting on the local achievement of national targets, as is the case under the CAP); and rewarding circular champions (e.g. through an annual prize awarded to the best-performing local authorities or local initiatives). The government should also encourage local authorities to take part in international **city-to-city learning networks** to favour capacity building through peer learning and the exchange of best practices.

Capacity building for the private sector and civil society

Ireland can build on several well-established capacity-building initiatives for businesses and citizens (e.g. CIRCULÉIRE and the Rediscovery Centre) to further build capacity on the circular economy.

For businesses, workers and private investors, the government can:

- Support, scale up and **expand existing capacity-building programmes** on the circular economy for professionals, namely the Modos Circular Economy Training Programme and the Rediscovery Centre’s professional development programmes and training. Modos offers a training programme, a mentoring and innovation award programme, webinars and business events for micro-enterprise and SMEs (Modos, 2021[35]). It is currently most relevant for construction, food, retail, manufacturing, textiles and fashion, electronics, plastics and packaging businesses. The DECC could work with other departments (e.g. DAFM) to expand the programme to additional audiences, such as farmers. The EPA can continue to support the Rediscovery Centre’s professional programmes as part of their renewed strategic partnership.

- Design and implement sectoral circular economy training and toolkits for **workers and businesses** (especially SMEs) on the circular economy, in partnership with CIRCULÉIRE, the Rediscovery Centre, Ibec and Chambers Ireland, for instance. The DECC can also consider the potential role of LEOs as a relay for disseminating circular economy training and tools among local SMEs. Such material should address the technical, regulatory and financial challenges of circular business models and practices (e.g. ecodesign) across key economic sectors and suggest workable solutions to address them.
- Engage with the **Department of Further and Higher Education, Research, Innovation and Science (DFHERIS) to design lifelong learning programmes** focusing on circular economy skills (e.g. complex problem-solving, resource management, social and system skills among others). This collaboration can build on the momentum generated by the ambitious target of achieving an 18% participation rate in lifelong learning by 2025[4] in Ireland's Economic Recovery Plan (Department of the Taoiseach, 2021[36]), which supersedes the Future Jobs Ireland 2019 strategy. The new Economic Recovery Plan does not mention the circular economy as a priority, as opposed to the Future Jobs Ireland strategy, which had the circular, bio- and low-carbon economy at the core of its fifth and final pillar (see Chapter 1).
- Develop **guidance on circular economy investment** for private investors (e.g. investment funds, venture capitalists and business angels) with an appetite for sustainable and responsible investment. This guidance would highlight the economic, environmental and social benefits of successful circular businesses. The DECC can also disseminate the new EU Strategy for Financing the Transition to a Sustainable Economy, which presents opportunities to drive private investment in the circular economy through a taxonomy, a disclosure framework for companies to inform investors and investment tools such as benchmarks, standards and labels. The circular economy is one of six environmental objectives under the EU Taxonomy.

For civil society, particularly youth, the government can:

- Integrate circularity into **first-, second- and third-level education curricula** to build in awareness and to foster skills for a circular economy.[5] The DECC can work with the Department of Education (DoE) to continue strengthening the emphasis on sustainability in first- and second-level education through Education for Sustainable Development (EDS) and to identify specific options for fostering circular awareness and behaviour. The DECC should also work with the DFHERIS to embed circular principles in relevant higher education courses and programmes (e.g. industrial design, engineering, etc.).
- Support the development of **regional circular economy hubs** to expand capacity building for citizens nationwide, beyond Dublin. This regional network would help to raise public awareness of the circular economy by sharing information with businesses and citizens, and organising capacity-building activities such as workshops on repairing or upcycling products. With the DECC's support, the EPA could consider this option as part of the redefinition of its partnership with the Rediscovery Centre, which ended mid-2021 under the National Waste Prevention Programme (NWPP) (EPA, 2021[37]).

Innovation: Support business development

Beyond regulation and financing, the DECC, DETE and local authorities can support market innovation and business development through several initiatives (OECD, 2020[1]), such as:

- Creating **spaces for experimentation** that could be labelled "circular innovation spaces", in which start-ups, businesses and universities could experiment with circular processes for targeted sectors (e.g. food) and assess results. For example, Amsterdam's "free zones" provide suitable spaces to test decentralised renewable electricity generation and smart grids.

- **Stimulating demand by being a launching customer**. For example, the Dutch national government implemented the Circular Challenge Project, where the government supports financially viable businesses and can act as a "launching customer" (Government of the Netherlands, 2016[38]).
- Creating **incubators** to promote circular economy projects. An incubator can support innovative projects related to the circular economy by: providing management and business assistance; promoting connections with strategic partners in the private, public and academic sectors; facilitating access to financial opportunities (investors, loans, public programmes); and providing a physical space for projects to develop and people to meet. In Ireland, the Rediscovery Centre's Circular Economy Academy has played an active role in developing successful circular social businesses in Ireland. As such, the academy could be home to these incubators, particularly if the plans for developing regional Rediscovery Centre circular economy hubs materialise.
- Establishing a **single window for the circular economy for businesses**. This window should offer all services, information and administrative support regarding circular economy projects for businesses, to reduce transaction costs for entrepreneurs and SMEs willing to be part of the transition. In Ireland, LEOs could provide a one-stop-shop for circular economy information and advice for businesses (e.g. information on applications for grants, tailored advice, etc.) (see the sub-section on co-ordination above).
- Introducing tailored **advisory services to support public and private sector** project promoters in making circular economy initiatives commercially viable. Advisory services such as Project Development Assistance (PDA) facilities provide project promoters with the necessary technical, legal and financial advice required for investing in circular economy ventures. PDA activities can include feasibility studies, stakeholder and community mobilisation, financial engineering, business plans, technical specifications and procurement procedures (EC, 2021[39]). These services could be dispensed through LEOs given adequate circular economy capacity building. Implementing authorities can work with national business associations such as Ibec and the Irish Farmers' Association to gain a wider reach and to adapt and disseminate tailored information among their constituencies.

Data and assessment: Generate a national circular economy information system to monitor and adjust policy

Collecting and analysing data related to the circular economy is key to informing circular economy policy making, assessing the effectiveness of circular economy policies, and adjusting them when needed. In Ireland, the Central Statistics Office (CSO) and the EPA work together to comply with obligations under the EU Waste Statistics Regulation. The EPA provides additional data and analytical insights on indicators of national interest for which there is no obligation yet (e.g. food waste). To enhance policy making based on robust evidence and data, the DECC and EPA can take action on data collection, monitoring and sharing.

Data collection

- **Harmonise data collection** among data providers to feed into a national circular economy information system. This information system would centralise the data required to assess and inform circular economy policy making. The EPA is already working with EPA-licensed waste treatment facilities, the National Waste Collection Permit Office, local authorities and Producer Responsibility Initiatives (responsible for EPR schemes) to harmonise and streamline data collection, ensuring better data quality and timeliness.
- Expand data collection from waste-related data to **environmental, economic and social data**. Indicators should relate to the economy, value-added and employment as well as broader

environmental indicators but could also cover well-being and social inclusion dimensions. After identifying priority government stakeholders to be involved in circular economy policy making at the national level, indicators collected by others government entities can be identified, adapted where necessary and used to inform circular economy policy and targets.

- Collect locally **disaggregated and sectoral data**, particularly in key sectors for the circular transition in Ireland such as food and the built environment, to inform circular economy policy. To do so, the EPA and DECC can build on existing mechanisms such as Resource Management Plans for construction and demolition projects, which the EPA currently recommends planning authorities mandate for all construction and demolition projects (EPA, 2021[22]), by mandating their use and digitalising them to enable harmonised data collection. The DECC can also introduce new reporting obligations and calculation methods such as making reuse and repair targets statutory within waste management plans, as foreseen by the Circular Economy Bill (DECC, 2021[40]).
- Invest in **research to develop methodologies** for qualitative and quantitative assessment. For example, the EPA-funded and Clean Technology Centre-led Q2Reuse project, the Rediscovery Centre, the CRNI and the Eastern Midlands Waste Region are developing methodologies for the qualitative and quantitative assessment of the reuse sector that reflects EU guidance but is tailored to the Irish market.

Data monitoring

- Track **progress on implementing the governance framework** required for the circular economy by inviting stakeholders to take part in regular (e.g. annual) assessments using the OECD Scoreboard on the Governance of the Circular Economy (OECD, 2020[1]) (Box 5.6).
- Monitor the achievement of the objectives and targets set out in the strategy through a **standardised set of indicators** feeding into the national circular economy information system. Indicators are crucial for monitoring the implementation of a circular economy strategy towards the achievement of its targets. The current NWPP annual report is set to become an annual Circular Economy Report and allow the tracking of progress on selected indicators such as reuse, repair, resource consumption and contamination levels (EPA, 2021[37]). The DECC and EPA should collaborate to ensure that these indicators are consistent with and relevant for the second iteration of the Strategy.

Data sharing

- Encourage **data sharing from the private sector**, to enable projections on waste, resources and socio-economic and environmental impacts, by ensuring that data shared publicly is anonymised and cannot be traced back to a single company.

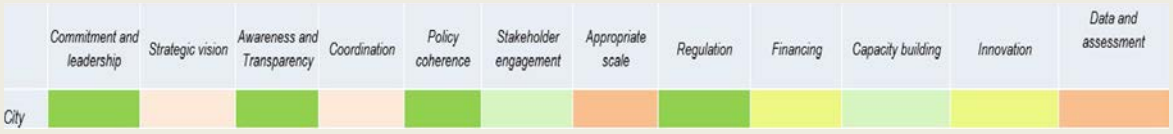
Box 5.6. Methodology of the OECD Scoreboard on the Governance of the Circular Economy

The OECD Scoreboard on the Governance of the Circular Economy is a self-assessment tool to support governments in identifying gaps and assessing progress to improve policies and self-assess the existence and level of implementation of enabling conditions. It is composed of 12 key dimensions that governments and stakeholders can evaluate based on a scoreboard system, indicating the level of implementation of each dimension: Newcomer (Planned; In development), In progress (In place, not implemented; In place, partly implemented) and Advanced (In place, functioning; In place, objectives achieved). These dimensions include: 1) Roles and responsibilities; 2) Strategic vision; 3) Awareness and transparency; 4) Co-ordination; 5) Policy coherence; 6) Stakeholder engagement; 7) Appropriate scale; 8) Regulation; 9) Financing; 10) Capacity building; 11) Innovation; 12) Data and assessment. The visualisation of the results (Figure 5.3) provides an overview of the level of circularity of a city or region for each of the 12 circular economy governance dimensions.

Figure 5.3. Visualisation of the OECD scoreboard results

A. Graph

B. Traffic light system



Source: OECD (2020[1]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en.

To carry out the self-assessment, the following procedure is recommended (Figure 5.4): i) clearly identify the lead team to co-ordinate the self-assessment; ii) set out the objectives and scope of the assessment in advance; iii) map stakeholders that will play a key role in a circular economy: governmental departments, public, private and non-profit actors; iv) organise targeted workshops with key stakeholders to share, compare and confront views and achieve consensus; and v) repeat the process once a year to track progress and to keep stakeholders engaged.

Figure 5.4. A five-step self-assessment methodology

Source: OECD (2020[1]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en.

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Notes

[1] Under the Whole of Government Circular Economy Strategy, the Circular Economy Advisory Group replaces the Waste Advisory Group created for the Waste Action Plan for a Circular Economy.

[2] The DECC chairs the Circular Economy Working Group, and the DECC and DAFM co-chair the Bioeconomy Implementation Group.

[3] A total of 36 organisations were represented in the Waste Advisory Group, including industry associations and federations (e.g. Irish Waste Management Association, Irish Farmers' Association, Construction Industry Federation), government entities (e.g. Eastern-Midlands Regional Waste Office, Competition and Consumer Protection Commission, Environmental Protection Agency), trade unions (Irish Congress of Trade Unions) and networks (e.g. Irish Environmental Network, Community Resources Network Ireland) (DECC, 2020[44]).

[4] The participation rate for lifelong learning was 12.6% in 2019, slightly above the EU average of 11.3% (Solas, 2020[43]).

[5] Six groups of skills are relevant for circular jobs: basic, complex problem-solving, resource management, social, system and technical (Circle Economy, 2020[45]). For more information, see Chapter 1.

Annex A. List of stakeholders consulted during the policy dialogue

Organisation	Name
ARC Business Solutions	Gerry McDevitt
Arup	Janet Lynch
Beauparc	David Tobin
BIA Innovator Campus	Sarah Hanley
Blocworx	Mark O'Sullivan
Bord Bia	Martin Hofler
Bord Iascaigh Mhara (BIM)	Catherine Barrett
Business in the Community (BITC)	Maureen O'Donnell
Cement Manufacturers Ireland	Brian Gilmore
Chambers Ireland	Emma Kerins
	Michaela Reilly
Change by Degrees	Tara Shine
Circular Bioeconomy Cluster South-West, Munster Technological University	Catriona Power
CIRCULÉIRE	Geraldine Brennan
Cisco	Brian Jordan
Clean Ireland Recycling	Brian Lyons
Clean Technology Centre Cork	Colum Gibson
	Keelin Tobin
Community Resources Network Ireland (CRNI)	Claire Downey
Conscious Cup Campaign	Sorcha Kavanagh
Cré	Percy Foster
Dawn Meats	Gill Higgins
Department of Agriculture, Food and the Marine (DAFM)	Patrick Barrett
	Tony Quinn
Department of Business, Enterprise and Innovation (DBEI)	Joseph Cummins
	Aisling McCarthy
Department of Enterprise, Trade and Employment (DETE)	Andrew Moloney
Department of Finance	Niamh Campbell
	Sean Judge
Department of Housing, Local Government and Heritage (DHLGH)	Graham McGovern
	Conall O'Connor
Department of the Environment, Climate and Communications (DECC)	Vivienne Ahern
	Andrew Caldicott
	Jean Clarke
	Errol Close
	Dennis Dunne
	Paul McDonald
	Niamh Ní Fhlaithbheartaigh
	Kevin O'Donoghue
	Brian Quirke

Organisation	Name
Dowmann	Paul Manning
Dublin Chamber	Sinead Healy
Dublin City Council	Mary McSweeney
Dublin City University	Samantha Fahy
EarthRoute	Niall McManus
Eastern and Midland Regional Assembly	Clare Bannon
	Jim Conway
Enrich	Tim Duggan
Environmental Protection Agency (EPA)	Helen Bruen
	Fiona McCoole
FoodCloud	Emma Walsh
	Iseult Ward
Galway-Mayo Institute of Technology (GMIT)	Mark Kelly
Halo Business Angel Network	Julian Seymour
Health Service Executive	Helen Maher
Ibec	Una Fitzpatrick
	Shane Lyster
	Alec McAllister
	Aoife O'Donovan
	Erik O'Donovan
	Linda Stuart-Trainor
	Aidan Sweeney
IDDEA	Rebecca Byrne
IFFPG Farm Plastics	Liam Moloney
Integrated Materials Solutions Ireland	Cian O'Hora
InterTradeIreland	Grainne Lennon
Irish Bioeconomy Foundation	Stephen Napier
Irish Bioenergy Association	Sean Finan
Irish Farmers' Association	Geraldine O'Sullivan
Irish Manufacturing Research	Romain Couture
	Geraldine Ann Cusack
	Kevin James Fraser
	David McCormack
Irish Waste Management Association (IWMA)	Conor Walsh
Irish Water	Charlie Coakley
Kelsius	Eamonn Quinn
Kerry County Council	Thomas Griffin
Laois County Council	Suzanne Dempsey
Local Government Management Agency (LGMA)	Sean Scott
Marine Institute, University College Cork	Jenny O'Leary
Mayo County Council	Kevin Swift
National College of Art and Design	Enda O'Dowd
National Waste Collection Permit Office (NWCPO)	Tom Shanahan
NewERA	John Paul Corkery
	Jim Golden
NUI Galway	Cathal O'Donoghue
Office of Government Procurement (OGP)	Derek Flanagan
Oxfam	Trevor Anderson
Repak	Tom Gaynor
	Ruairi Holyoake
	Brenda Keogh Murphy
	Colm Munnelly

Organisation	Name
RPS Group	Warren Phelan
Socio-Economic Marine Research Institute, National University of Ireland	Stephen Hynes
Southern Waste Region	Margaret Murphy
SustainabilityWorks	Aideen O'Hora
Technological University Dublin	Graham ONeill
Terratonics	Alan Ledwith
	Garvan Quish
Transport Infrastructure Ireland (TII)	Tom Casey
	Tony Redmond
Trinity College Dublin	Breandan Goss
	Gavan Drohan
University College Cork	Paul Bolger
University College Dublin	Kevin O'Connor
University of Limerick	J. J. Leahy
	Muireann McMahon
WakeUp Capital	Faye Drouillard
	Parth Sogani
WEEE Ireland	Elizabeth O'Reilly

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The Circular Economy in Ireland

Ireland is at a turning point for the transition to a circular economy. The 2022 Whole of Government Circular Economy Strategy provides the policy framework for the circular economy in the country, and the forthcoming Circular Economy Bill is expected to strengthen waste and circular economy legislation. Nevertheless, with a circularity material use rate of 2% in 2020, Ireland shows significant scope for progress. The report analyses the state of play and challenges of the circular transition in Ireland and provides policy recommendations for circular economy policy across levels of government. It is the result of a two-year policy dialogue between the OECD, the Department of the Environment, Climate and Communications, as well as a broad range of public, private and civil society stakeholders.

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