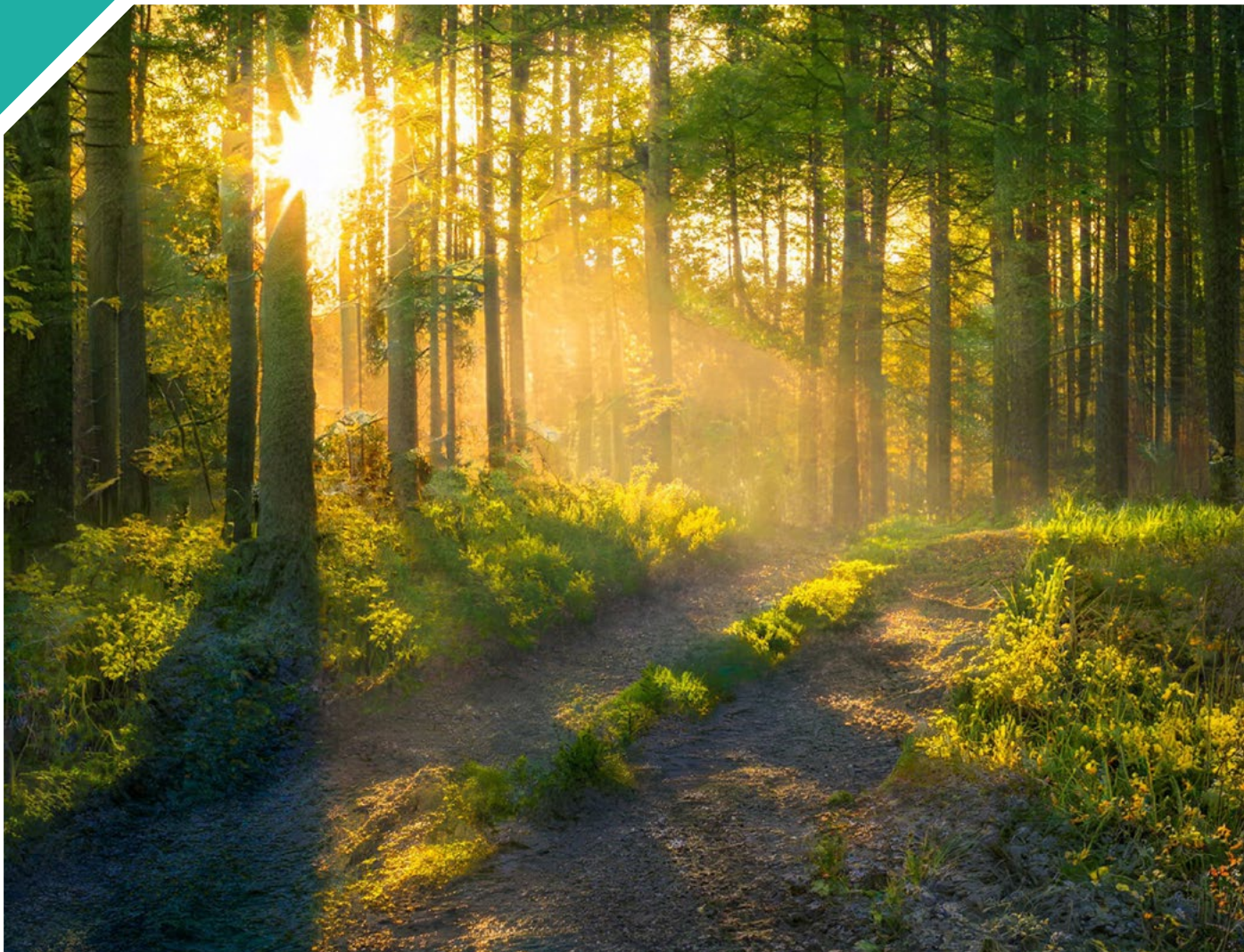


A Review of Circular Economy and Bioeconomy Governance in Ireland

Authors: Joanna O’Riordan, Richard Boyle, Seán Keating and Fergal O’Leary



Environmental Protection Agency

The EPA is responsible for protecting and improving the environment as a valuable asset for the people of Ireland. We are committed to protecting people and the environment from the harmful effects of radiation and pollution.

The work of the EPA can be divided into three main areas:

Regulation: Implementing regulation and environmental compliance systems to deliver good environmental outcomes and target those who don't comply.

Knowledge: Providing high quality, targeted and timely environmental data, information and assessment to inform decision making.

Advocacy: Working with others to advocate for a clean, productive and well protected environment and for sustainable environmental practices.

Our Responsibilities Include:

Licensing

- > Large-scale industrial, waste and petrol storage activities;
- > Urban waste water discharges;
- > The contained use and controlled release of Genetically Modified Organisms;
- > Sources of ionising radiation;
- > Greenhouse gas emissions from industry and aviation through the EU Emissions Trading Scheme.

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- > Audit and inspection of EPA licensed facilities;
- > Drive the implementation of best practice in regulated activities and facilities;
- > Oversee local authority responsibilities for environmental protection;
- > Regulate the quality of public drinking water and enforce urban waste water discharge authorisations;
- > Assess and report on public and private drinking water quality;
- > Coordinate a network of public service organisations to support action against environmental crime;
- > Prosecute those who flout environmental law and damage the environment.

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- > Implement and enforce waste regulations including national enforcement issues;
- > Prepare and publish national waste statistics and the National Hazardous Waste Management Plan;
- > Develop and implement the National Waste Prevention Programme;
- > Implement and report on legislation on the control of chemicals in the environment.

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- > Engage with national and regional governance and operational structures to implement the Water Framework Directive;
- > Monitor, assess and report on the quality of rivers, lakes, transitional and coastal waters, bathing waters and groundwaters, and measurement of water levels and river flows.

Climate Science & Climate Change

- > Publish Ireland's greenhouse gas emission inventories and projections;

- > Provide the Secretariat to the Climate Change Advisory Council and support to the National Dialogue on Climate Action;
- > Support National, EU and UN Climate Science and Policy development activities.

Environmental Monitoring & Assessment

- > Design and implement national environmental monitoring systems: technology, data management, analysis and forecasting;
- > Produce the State of Ireland's Environment and Indicator Reports;
- > Monitor air quality and implement the EU Clean Air for Europe Directive, the Convention on Long Range Transboundary Air Pollution, and the National Emissions Ceiling Directive;
- > Oversee the implementation of the Environmental Noise Directive;
- > Assess the impact of proposed plans and programmes on the Irish environment.

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- > Coordinate and fund national environmental research activity to identify pressures, inform policy and provide solutions;
- > Collaborate with national and EU environmental research activity.

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- > Monitoring radiation levels and assess public exposure to ionising radiation and electromagnetic fields;
- > Assist in developing national plans for emergencies arising from nuclear accidents;
- > Monitor developments abroad relating to nuclear installations and radiological safety;
- > Provide, or oversee the provision of, specialist radiation protection services.

Guidance, Awareness Raising, and Accessible Information

- > Provide independent evidence-based reporting, advice and guidance to Government, industry and the public on environmental and radiological protection topics;
- > Promote the link between health and wellbeing, the economy and a clean environment;
- > Promote environmental awareness including supporting behaviours for resource efficiency and climate transition;
- > Promote radon testing in homes and workplaces and encourage remediation where necessary.

Partnership and Networking

- > Work with international and national agencies, regional and local authorities, non-governmental organisations, representative bodies and government departments to deliver environmental and radiological protection, research coordination and science-based decision making.

Management and Structure of the EPA

The EPA is managed by a full time Board, consisting of a Director General and five Directors. The work is carried out across five Offices:

1. Office of Environmental Sustainability
2. Office of Environmental Enforcement
3. Office of Evidence and Assessment
4. Office of Radiation Protection and Environmental Monitoring
5. Office of Communications and Corporate Services

The EPA is assisted by advisory committees who meet regularly to discuss issues of concern and provide advice to the Board.

EPA RESEARCH PROGRAMME 2021–2030

Waste and Circular Economy Governance

(2022-GCE-1086)

Final Report

A Review of Circular Economy and Bioeconomy Governance in Ireland

Prepared for the Environmental Protection Agency

by

Institute of Public Administration

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This report is based on research carried out/data from 2023 to April 2024. More recent data may have become available since the research was completed.

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Executive Summary

The circular economy and bioeconomy are growing in prominence within public policy. In a circular economy, products and materials are kept in circulation through processes such as maintenance, reuse, refurbishment, remanufacture, recycling and composting. The objective of the circular economy is to decouple economic activity from the consumption of finite resources.¹ The bioeconomy involves using renewable biological resources sustainably to produce food, energy and industrial goods. It also exploits the untapped potential stored within biological waste and residual materials.

Both the circular economy and the bioeconomy are central to climate action and the aim of using resources more sustainably in order to reduce greenhouse gas emissions. They can also deliver wide-ranging economic and societal benefits. However, improving Ireland's circularity rate has been challenging. Ireland's circular material use rate (the extent to which material resources used come from recycled waste materials) in 2022 was 1.8%, significantly below the EU average of 11.5%.² In respect of the bioeconomy, while there is greater clarity from a policy perspective, and governance structures are in place, its breadth and evolving nature, with innovation and learning emerging on an ongoing basis, means that policy implementation can be a slow and iterative process. Raising the profile of the bioeconomy across government has also been a challenge.

This is the final report from a research project to review governance arrangements for both the circular economy and the bioeconomy in Ireland (Project 2022-GCE-1086). The research was commissioned by the Environmental Protection Agency (EPA) as part of Phase II of the EPA–Institute of Public Administration Research Programme and was carried out in 2023 and spring 2024. A steering group comprising relevant government departments, agencies and local government representatives was established by the EPA to oversee the research and review outputs.

The Organisation for Economic Co-operation and Development refers to “sound public governance”, with public governance defined as “meeting the needs of and improving outcomes for citizens” (OECD, 2020). This equates to implementing government policy, which is why the term is sometimes seen as synonymous with public management (Hughes, 2023). However, delivering on many government policies requires different sectors and levels of government working across organisational boundaries. This presents its own additional set of challenges.

The research reviews governance arrangements for both the circular economy and the bioeconomy and makes recommendations for improvements. The findings point to the considerable importance of robust governance arrangements in addressing the complex challenge of developing the circular economy and bioeconomy in Ireland. First and foremost, structures are required; however, good governance is not only about structures, it also requires clarity about roles and responsibilities and an emphasis on leadership and capacity building. Stakeholder engagement and knowledge generation and sharing are essential to enrich and inform policy, while regulation, monitoring and evaluation are needed to review progress, and to ensure appropriate sanction and corrective action when needed.

The circular economy and bioeconomy are distinct policy areas but there are clear overlaps in terms of their objectives, that is, a more sustainable, regenerative, innovative and resource-efficient world with a lower carbon footprint. It is now recognised at EU level that to be successful the European bioeconomy needs to have circularity at its heart. Similarly, part of the evolution from waste management to the circular economy involves consideration of circular approaches to design and production. There is an opportunity to reflect bio-based innovations and solutions in a range of circular economy priority areas, for example packaging, plastics, textiles, food and

1 <https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview>.

2 <https://ec.europa.eu/eurostat/web/environment/information-data/material-flows-resource-productivity>.

construction materials, while also ensuring that waste prevention remains a priority.

This research concludes that there is an opportunity in both the forthcoming updated Circular Economy Strategy and the whole-of-government bioeconomy strategy proposed in the Bioeconomy Action Plan to promote meaningful policy coherence. In addition,

greater collaboration on a range of common activities would leverage learning and synergies, while also facilitating the participation of very busy public servants involved in the development of both areas. The starting point for delivering on these conclusions is greater integration in terms of high-level governance structures.

1 Introduction

This is the final report from a research programme to review governance arrangements in respect of both the circular economy and bioeconomy in Ireland.³ The research was commissioned by the Environmental Protection Agency (EPA) and was carried out in 2023 and spring 2024. A steering group comprising relevant government departments, agencies and local government was established by the EPA to oversee the research and review outputs.

The circular economy and bioeconomy are relatively new and evolving policy areas. In a circular economy, products and materials are kept in circulation through processes such as maintenance, reuse, refurbishment, remanufacture, recycling and composting. The objective of the circular economy is to decouple economic activity from the consumption of finite resources.⁴ The bioeconomy involves using renewable biological resources sustainably to produce food, energy and industrial goods. It also exploits the untapped potential stored within biological waste and residual materials.⁵

Both the circular economy and the bioeconomy are central to climate action and the aim of using resources more sustainably in order to reduce greenhouse gas emissions. They can also deliver wide-ranging economic and societal benefits. These goals are given prominence in the Letta (2024) report on the future of the EU's single market. This wide-ranging review of the EU economy emphasises the importance of developing a circular single market, with circularity principles central to the EU's climate action objectives and also its economic development

goals. However, while the prize is great, so too is the challenge. Ireland's circular material use (CMU) rate (the extent to which material resources used come from recycled waste materials) in 2022 was 1.8%, significantly below the EU average of 11.5%.⁶ While there are a range of plausible explanations as to why Ireland's circularity rate is lower than that of other similar EU countries, including the nature of Ireland's economy and the country's growing population, there is still huge potential for improvement (Circle Economy Foundation, 2024). This is consistent with the experiences of other European countries, with a European Court of Auditors (2023) report on behalf of the European Commission highlighting the challenge of evolving from a linear to a circular economy approach. Overall, the report concludes that the pace of progress remains slow and that the EU's ambition of doubling its share of material recycled and fed back into the economy by 2030 looks very challenging. This is also the conclusion of the European Environment Agency (2024: 7), which concludes that "more needs to be done" across Europe to embrace circularity.

In respect of the bioeconomy, there is greater clarity from a policy perspective, in particular since the publication of the Bioeconomy Action Plan (Government of Ireland, 2023a). There are governance structures in place tasked with supporting the development and implementation of policy and ensuring an integrated policy approach across government to grow Ireland's bioeconomy. However, the breadth and evolving nature of the bioeconomy, with innovation and learning emerging on an ongoing

3 Other reports under the research programme are available at <https://www.ipa.ie/research-papers/epa-reports.5762.html> (accessed 11 December 2024).

4 <https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview> (accessed 11 December 2024).

5 The EU's Bioeconomy Strategy (European Commission, 2018) describes the bioeconomy as follows: "The bioeconomy covers all sectors and systems that rely on biological resources (animals, plants, micro-organisms and derived biomass, including organic waste), their functions and principles. It includes and interlinks: land and marine ecosystems and the services they provide; all primary production sectors that use and produce biological resources (agriculture, forestry, fisheries and aquaculture); and all economic and industrial sectors that use biological resources and processes to produce food, feed, bio-based products, energy and services. To be successful, the European bioeconomy needs to have sustainability and circularity at its heart. This will drive the renewal of our industries, the modernisation of our primary production systems, the protection of the environment and will enhance biodiversity".

6 <https://ec.europa.eu/eurostat/web/environment/information-data/material-flows-resource-productivity> (accessed 11 December 2024).

basis, means that policy implementation can be a slow and iterative process. Raising the profile of the bioeconomy across government has also been a challenge. The second progress report of the Bioeconomy Implementation Group points to the importance of good governance in supporting this process, noting that the “breadth of activities across policy areas and across scales of governance creates the ongoing need for good governance approaches including coordination and direction setting” (Government of Ireland, 2023a: 19).

The challenges set out above for both the circular economy and the bioeconomy stem, in part, from the complexity of the policy challenge and the inherent need for a cross-governmental, coordinated response. From this perspective, both the circular economy and the bioeconomy, as well as other environmental policy areas, can be described as “wicked problems” (Rittel and Webber, 1973; Head and Alford, 2015). Clarity in relation to governance structures and processes is fundamental to delivering on this goal, as progress will be possible only if key actors are actively engaged in the development and implementation of circular economy and bioeconomy policy, and if there is clarity in relation to roles and responsibilities. The conclusions and recommendations of this research are aimed at improving governance arrangements for the circular economy and bioeconomy.

1.1 Research Approach

The objective of the research project is to identify strengths and weaknesses in respect of both circular economy and bioeconomy governance in Ireland and to make recommendations to support improvements in and, ultimately, the achievement of a higher rate of circularity and enhanced bio-based value chains.

A previous research programme that reviewed governance in the area of environmental policy on behalf of the EPA (O’Riordan *et al.*, 2022) identified six themes as critical to better governance arrangements. These six themes are used in this paper as a lens through which to review circular economy and bioeconomy governance:

1. clearly assign roles and take ownership of responsibilities;
2. focus on building capacity and sharing learning;

3. ensure a targeted and diverse approach to regulation;
4. carefully manage stakeholder engagement;
5. make data central: its generation, monitoring, reporting and review;
6. encourage knowledge sharing, experimentation, a willingness to engage with different perspectives, and responsiveness to local contexts.

These themes are consistent with a policy development framework identified by the Irish Civil Service Management Board to strengthen policymaking in the civil service. This framework identifies three pillars – evidence, implementation and feasibility, and legitimacy. These are supported by skills and capabilities, and processes, policy methods and tools, for better policy development and implementation (OECD, 2023: 17). More broadly, the themes are consistent with the Organisation for Economic Co-operation and Development’s (OECD’s) guiding principles for achieving policy coherence for sustainable development (OECD, 2021, 2023), which are aimed at assisting policymakers and stakeholders in delivering on the United Nations (UN) Sustainable Development Goals.

1.2 Research Methodology

The identification of strengths and weaknesses in relation to the implementation of policy is a complex and nuanced task. Consequently, a primarily qualitative research approach was considered most appropriate for data gathering and analysis (Bluhm *et al.*, 2011). A number of complementary research methods shaped the gathering of the evidence presented in this report.

1.2.1 Mapping circular economy and bioeconomy structures and relationships

The first task of the research programme was to map circular economy and bioeconomy governance structures in order to provide clarity in relation to current and proposed structures. According to Bovens (2010: 963), “there is no accountable governance without accountability arrangements” – in other words, clearly defined and effective structures and processes are a prerequisite for better governance. The process of reviewing and amending the governance map

continued throughout the duration of the project and facilitated considerable debate and engagement across government, including at different levels of government. Deliberations during the development of the map were significant, including in relation to leadership and roles and responsibilities. The governance map for the circular economy and bioeconomy in Ireland determined in the course of this research and accepted by the project steering group is shown in Appendix 1.

1.2.2 Key informant interviews

Interviews with stakeholders were particularly important in collecting information on the issues addressed in the review. Twenty-eight people were interviewed. Interviewees were selected from each sector of the governance structure: central government, local government and the implementing bodies. A detailed research questionnaire was developed to identify governance strengths and limitations, which was reviewed by the project steering group. The questionnaire encompassed questions on structures, roles and responsibilities and oversight, but also wider governance issues, including stakeholder engagement, the use of data and evidence, capacity building and the approach to regulation. A list of the interviewees’ organisations is provided in Appendix 2.

1.2.3 Country and region case studies

A review of circular economy and bioeconomy policy and governance was carried out in five countries and regions regarded as progressive and/or interesting in terms of governance arrangements for the promotion of the circular economy and bioeconomy. The countries and regions of interest identified by the research team and the project steering group were Denmark, Estonia, Finland, Flanders and Scotland. The case studies were carried out in summer 2023 using a mix of desk research and a select number of interviews. In addition to providing information about the approach to implementation of a circular economy and bioeconomy in the selected countries, evidence from the case studies informed analysis and conclusions in respect to circular economy and bioeconomy governance in Ireland.

The detailed case studies have been published as a separate report (O’Riordan *et al.*, 2024).

1.2.4 Construction and demolition waste case study

This report focuses primarily on overarching governance arrangements for the circular economy and bioeconomy. As such, the scope and focus of the paper do not allow for a detailed review of governance arrangements for all waste streams, that is, municipal solid waste, commercial and industrial waste, construction and demolition (C&D) waste, liquid waste, hazardous waste, food waste or other sub-categories of waste or smaller waste streams, such as electronic waste and textiles. However, for some of these waste streams, there are distinct governance structures. The research team and the project steering group therefore determined that it would be useful to conduct a case study of one waste stream. C&D waste was chosen as it represents the largest waste stream and one that affords considerable opportunity to improve Ireland’s approach to waste and the circular economy. The case study reviews governance structures at both central and local government levels and identifies strengths and weaknesses. The detailed C&D case study is included in an Institute of Public Administration (IPA) working paper prepared as part of the research programme.⁷

1.2.5 Governance workshop

Following the initial phase of the research, a working document setting out key research findings in respect of circular economy and bioeconomy governance in Ireland was developed. This was shared with key stakeholders, who were invited to a workshop to review and validate emerging conclusions and to discuss recommendations related to circular economy and bioeconomy governance. There was a good level of engagement at the workshop, which was particularly useful for debating the recommendations included in the final chapter of this report.

1.3 Report Structure

Following this introductory chapter, Chapter 2 of this report sets out the background and policy context to

⁷ Available at www.ipa.ie/research (accessed 11 December 2024).

the circular economy and bioeconomy in Ireland. It notes how policy in Ireland has mirrored that of the EU, particularly in seeking to achieve a coherent policy approach that can deliver economic, social and environmental benefits at national, regional and local levels. Chapter 3 presents the research findings, that is, the strengths and limitations of circular

economy and bioeconomy governance in Ireland. The findings in this chapter draw on all elements of the research methodology. Chapter 4 analyses the findings and develops conclusions in respect of each of the six research themes. The final chapter provides a summary of the research conclusions and recommendations.

2 Background and Context

This chapter explains how circular economy and bioeconomy policy in Ireland has evolved and, in particular, how it has reflected EU policy since the European Green Deal (McLoughlin and Deane, 2020) and the UN's commitment to sustainability (UN, 2015). This chapter also reviews the current governance arrangements, at both the central and the local level, in respect of both policy areas.

2.1 Context

The circular economy is one that seeks to minimise the environmental impact of economic growth. It is not just about better waste management or more recycling, it is about breaking the cycle of wasteful resource extraction, unsustainable consumption and unnecessary disposal (Government of Ireland, 2021). Furthermore, a circular economy can provide positive benefits for the economy and society, providing opportunities and employment at the local and regional levels for those previously engaged in activities that generated high levels of waste and greenhouse gas emissions. The overarching aim of the circular economy is to integrate sustainability into Ireland's economic model.

The bioeconomy utilises the products, services, waste and side-streams from sectors such as agri-food, forestry, the marine and aquaculture more sustainably (Government of Ireland, 2023a: 2). While there are areas of convergence, there are also distinctions between the circular economy and bioeconomy, and many countries, including Ireland, treat them as discrete policy areas. The EU's updated Bioeconomy Strategy (European Commission, 2018) emphasises that, to be successful, the European bioeconomy needs to have sustainability and circularity at its heart. This is based on an awareness that the circular economy and bioeconomy share a common target, which is a more sustainable, regenerative, innovative and resource-efficient world with a lower carbon footprint.

The interconnectivity between the circular economy and the bioeconomy is illustrated by the butterfly diagram of the circular economy developed by the Ellen MacArthur Foundation and included in Appendix 3 of this report.⁸ Rather than distinguishing between the circular economy and the bioeconomy, the model draws attention to the technical and biological sides of the circular economy. In the technical cycle, products and materials are kept in circulation through processes such as reuse, repair, remanufacture and recycling. In the biological cycle, renewable biological resources are sourced sustainably and used to produce nature-based products, food and feed and bio-based materials and bioenergy.

A number of guiding principles inform the development of the bioeconomy in Ireland and elsewhere. These are explained in the Bioeconomy Action Plan (Government of Ireland, 2023a: 8):

- Sustainability. Environmental sustainability is integral to the development of the bioeconomy.
- Cascading. Higher value applications (e.g. food or bio-based materials) are derived prior to their use in energy and fuel generation.
- Precautionary. Innovation in the area is grounded in a precautionary approach to ensure that developments “do no harm”.
- Food first. Priority is afforded to initiatives that promote food security.
- Area-based local and regional development. Valuing a joined-up approach to the development of the bioeconomy that supports the contribution of the bioeconomy to economic, regional and local development.

The wide-ranging and cross-sectoral characteristics of the bioeconomy are illustrated in an infographic developed for the Bioeconomy Action Plan and reproduced in Appendix 4 of this report (Government of Ireland, 2023a: 5). This representation complements the diagram by the Ellen MacArthur Foundation.

⁸ <https://www.ellenmacarthurfoundation.org/circular-economy-diagram> (accessed 11 December 2024).

The OECD (2022) suggests that Ireland is at a turning point in its transition towards a circular economy. While a circular economy encompasses better waste management, it also represents a new model of production and consumption. Many countries, including Ireland, have sought to develop circular economy policy and governance from long-standing approaches to waste management. However, as highlighted by the European Court of Auditors (2023), this approach is not without its challenges, and it is one of the reasons identified for the slow rate of progress in many European countries, as the full range of opportunities afforded by the circular economy have not progressed. Regarding the bioeconomy, while there is clarity in relation to policy direction, the need to position the bioeconomy at the heart of the transition to a net-zero society needs to be “more widely recognised, understood and communicated” (Government of Ireland, 2023a: 12).

2.2 International and National Policy on the Circular Economy and Bioeconomy

The European Green Deal was adopted by the EU Council of Ministers in December 2019. The deal represents a package of policy initiatives that aim to set the EU on a path to sustainability, with the ultimate goal of reaching climate neutrality by 2050. Prior to 2019, the EU had wide-ranging environmental policies that promoted sustainability, including on the circular economy and bioeconomy. However, the European Green Deal provides an overall policy agenda and road map to deliver on objectives in respect of greenhouse gas emission reductions. In addition, it gives primacy to the cross-cutting nature of climate change, emphasising that the delivery of the deal requires a coherent approach to policymaking (McLoughlin and Deane, 2020). In order to provide a road map for delivering the climate commitments set out in the European Green Deal, in particular the target of reducing emissions by at least 55% by 2030, the European Commission in 2021 adopted a package of legislative proposals called Fit for 55. The package aims to ensure that all sectors of the EU's economy meet this target but places a particular emphasis on areas of the economy regarded as needing a strong green transition to meet climate targets. As noted

above, in spring 2024, the publication of the Letta report on the future of the single market (Letta, 2024) also gave prominence to the importance of circularity in terms of European economic development.

The EU adopted its first Circular Economy Action Plan in 2015 (European Commission, 2015). This was reviewed in 2019 (European Commission, 2019), resulting in a new Circular Economy Action Plan in 2020 (European Commission, 2020). The new action plan commits to initiatives along the entire life cycle of products. Key objectives of the plan include ensuring less waste, empowering consumers and public buyers, making circularity work for citizens, and a focus on sectors that use the most resources and where the potential for circularity is high. The overarching objective is to embed a circular economy approach in the economy and society. In addition, the European Commission has revised the circular economy monitoring framework,⁹ taking better account of climate neutrality needs and other priorities of the European Green Deal. The revised monitoring framework for the circular economy includes new indicators, such as material footprint and resource productivity. These indicators monitor the material efficiency of the EU's production and consumption system.

The first EU Bioeconomy Strategy was published in 2013 (European Commission, 2013). This established the need for Europe to evolve from a fossil- to a bio-based economy. It was followed in 2018 by a second strategy (European Commission, 2018). The objective of the new strategy was to accelerate progress and to further develop the potential of a circular and sustainable bioeconomy. Subsequently, in the aftermath of the European Green Deal, the Commission was asked to provide a progress report on the implementation of the Bioeconomy Strategy. This was published in 2022 (European Commission, 2022). This report notes the progress being made in respect of the bioeconomy across Europe and emphasises the importance of policy coherence and the potential of the bioeconomy to help meet the objectives of the European Green Deal.

More recently, a series of targeted actions to boost biotechnology and biomanufacturing were announced by the European Commission (2024).

9 <https://ec.europa.eu/eurostat/web/circular-economy/monitoring-framework> (accessed 11 December 2024).

While recognising the need for action to address the wide-ranging challenges faced by the bioeconomy (e.g. research and technology transfer to the market, regulatory complexity, access to finance, skills, value chain obstacles, intellectual property, public acceptance and economic security), the Commission communication also positions the bioeconomy as central to the response to climate change and, in parallel with this, as a driver of EU competitiveness, and supportive of regional and rural development. The communication also indicated that the Commission would review the EU’s Bioeconomy Strategy by the end of 2025. The review will take into account current societal, demographic and environmental challenges, reinforcing the bioeconomy’s industrial dimension and its links to biotechnology and biomanufacturing, and thus its ability to contribute to a stronger EU economy.

In Ireland, thinking about the circular economy and bioeconomy has aligned with the European approach. In 2020, *A Waste Action Plan for a Circular Economy: Ireland’s National Waste Policy 2020–2025* (Government of Ireland, 2020) was published. It emphasised that waste policy can no longer be about how waste is treated, but must be far broader, also looking at how products are produced and consumed, in other words, how Ireland can transition to a circular economy. One of the measures included in the Waste Action Plan for a Circular Economy (WAPCE) was “the development of a high-level all of government circular economy strategy” (Government of Ireland, 2020: 11). There was also a provision for the development of sectoral road maps to support the development of a circular economy approach across all waste streams.

The *Whole of Government Circular Economy Strategy 2022–2023* was published in late 2021 (Government of Ireland, 2021). It emphasised that the move to sustainable production and consumption, which is essential to meeting Ireland’s emission reduction targets, requires a clear policy approach and support from across government. One of the main aims of the Circular Economy Strategy (CES) was to provide a joined-up national policy framework in respect of the circular economy and to draw attention to how the circular economy relates to a wide range of different policy areas across government. The strategy further noted that “Ireland’s Circular Economy Strategy will be an evolving document which will be regularly updated in light of progress achieved and as new opportunities and challenges are identified” (Government of Ireland,

2021: 16). A Circular Economy Act (2022) has also been passed by the government. This amends elements of the Waste Management Act (1996) while also putting the CES on a statutory footing, thereby ensuring that the reuse of resources is at the heart of Irish government policy. Under the terms of the Act, an updated version of the CES is required to be published by the end of 2024.

The WAPCE also indicated that the EPA-led National Waste Prevention Programme would be reconfigured into Ireland’s Circular Economy Programme (CEP). The CEP is now a statutory programme under the Circular Economy Act to “give effect to the objectives set out in the Government’s Circular Economy Strategy” and, in particular, “to support the Department’s Circular Economy Unit in overseeing national, regional and local activities to improve coherence and alignment” (Government of Ireland, 2020: 11). The Circular Economy Act also provides that the CEP will incorporate the EPA’s statutory obligations in respect of waste prevention programmes.

Priority areas under the CEP are packaging, plastics, textiles, food, construction and building, electronics, vehicles and batteries. Actions in respect of these waste streams are grouped under the four pillars of the programme: advocacy; innovation and demonstration; delivering through partnerships; and regulation for circularity. Some examples of CEP strategic collaborations include Circuléire, the national platform for circular manufacturing, the Rediscovery Centre, which supports and promotes learning in relation to the circular economy, and Community Resources Network Ireland, which is the representative body for community-based reuse, repair and recycling organisations in Ireland. The CEP has a public engagement remit across all its activities. The aim of this engagement is to share evidence, knowledge and insights with government, other stakeholders and the general public in order to raise awareness and change behaviours.

Other responsibilities of the EPA, broadly in the area of the circular economy, include food waste prevention programmes under the Waste Management Act and Waste Framework Directive regulations. The EPA also has a statutory role in delivering a national environmental research programme, and the EPA Research 2030 framework has a thematic hub, “Facilitating a Green and Circular Economy”,

supporting primary research. The EPA also has many statutory obligations to compile and report environmental data, including waste and circular economy data and Ireland's progress in respect of EU targets. The EPA's *State of the Environment Report* is published every 4 years. These reports provide information and knowledge to the public, policymakers and key economic sectors in support of action to protect and manage the environment. The eighth report in the series, published in 2024, includes a chapter on the circular economy. Lastly, the EPA also has responsibility under the Waste Management Act (1996) to develop the National Hazardous Waste Management Plan (NHWMP). The current plan, published in 2021, covers the period 2021–2027. The purpose of the plan is to protect human health and the environment in Ireland through best-practice management of hazardous waste.

Local government has responsibility for waste regulation and waste planning under the Waste Management Act (1996). These are carried out mainly on a shared-service basis by Regional Waste Management Planning Offices (RWMPOs) and are overseen by the Local Authority Waste Programme Coordinator's Office. It was recognised in the WAPCE that the transition to a circular economy requires a collaborative national response. To support the delivery of this objective, the three RWMPOs, under the auspices of the County and City Management Association (CCMA), collaborated on the preparation of a National Waste Management Plan for a Circular Economy (NWMPCE) 2024–2030 (Local Government Ireland, 2024), published in spring 2024.

Local authorities also have responsibility for waste enforcement of permitted facilities. This covers a range of roles, including regulatory enforcement, inspections and other activities to ensure compliance. Local authorities are assisted by three Waste Enforcement Regional Lead Authorities (WERLAs). These offices have responsibility for coordinating waste enforcement actions within regions. The EPA licenses and enforces waste activities that require an EPA licence. In addition, the EPA oversees environmental performance and associated enforcement activities of local authorities.

Two further local government organisations supporting waste management and the circular economy are the National Waste Collection Permit Office, which issues

waste collection licences to private operators on a shared-service basis for all local authorities, and the National Transfrontier Shipment Office, which licenses waste exports. All structures within local government for both waste and the circular economy are overseen by the CCMA through its Climate Action, Transport, Circular Economy and Networks Committee, and are working to deliver on the objectives of the NWMPCE.

While there is complexity in the various policies underpinning the circular economy in Ireland, it is envisaged that the whole-of-government CES (Government of Ireland, 2021) will sit at the top of the hierarchy of statutory plans and programmes. These include the WAPCE (2020–2025), the NWMPCE (2024–2030) and the EPA-led CEP (2021–2027) and NHWMP (2021–2027).

The first whole-of-government policy action on the bioeconomy, the National Policy Statement on the Bioeconomy (Government of Ireland, 2018), was published in 2018. This identified a policy framework including a long-term vision, strategic objectives and guiding principles for the development of the bioeconomy, highlighting Ireland's commitment "to be a global leader for the bioeconomy through a coordinated approach that harnesses Ireland's natural resources and competitive advantage and that fully exploits the opportunities available, while monitoring and avoiding unintended consequences". Together with European developments and a series of policy implementation, stakeholder and evidence-gathering reports, the policy statement underpinned the preparation of Ireland's Bioeconomy Action Plan, published in autumn 2023 (Government of Ireland, 2023a). The purpose of this plan is to further develop Ireland's bioeconomy and support the delivery of the vision included in the 2018 National Policy Statement on the Bioeconomy (Government of Ireland, 2018).

The potential of the bioeconomy to support government objectives on sustainable development, climate action, the circular economy, competitiveness, and rural and regional development is highlighted in the Bioeconomy Action Plan. One of the measures set out in the plan is a commitment to develop a National Bioeconomy Strategy to further build on measures in the action plan and to promote the whole-of-government nature of the bioeconomy and the importance of a more coordinated approach. It has been indicated that this will be published by

the end of 2025. The Bioeconomy Action Plan also places a strong emphasis on bioeconomy knowledge and building an evidence base in respect of the bioeconomy.

2.3 Governance Arrangements for the Circular Economy and Bioeconomy

The Department of the Environment, Climate and Communications (DECC) has lead responsibility for circular economy policy in Ireland. The WAPCE (Government of Ireland, 2020), published in September 2020, led to an expansion in the responsibilities and resources of DECC’s former waste management unit. There are now three units supporting the development and implementation of circular economy policy under the Assistant Secretary General for Environment, Circular Economy and Governance. The EPA, as the environmental regulator, licenses and regulates waste activities requiring an EPA licence. The various structures are local government level, namely the RWMPOs, the WERLAs, the National Waste Collection Permit Office and the National Transfrontier Shipment Office, and also support circular economy governance. The National Waste Programme Coordinator, established in 2021 and located within the Local Government Management Agency, has responsibility for overseeing and coordinating these shared services, representing the local government sector in interactions with government departments and external waste stakeholders, and coordinating the local government sector’s input to the CES.

The EPA oversees Ireland’s CEP under a performance delivery agreement between the EPA and DECC. In order to do this, the EPA partners with a range of public and private bodies. Under the programme, the EPA has statutory responsibilities for circular economy and waste reporting and the national food waste prevention programme. The CEP, which had a budget of €2.5 million in 2022 (EPA, 2023a), is overseen by the EPA’s Board of Directors.

The EPA also oversees the implementation of the NHWMP. A NHWMP Group, including representatives from the EPA, DECC, the Department of Health, local government, the Office of Government Procurement, the Health Service Executive and the Irish Business and Employers Confederation, has been established

to assist in this task. The NHWMP sets out detailed measures to be actioned within its lifetime. Each recommendation is accompanied by an “owner” and specific actions to be implemented in the first half of the plan period. The plan also commits to a mid-term review of progress in respect of recommendations.

The EPA is responsible for compiling national statistics on circular economy activity and the generation and management of waste in Ireland. National circular economy and waste statistics are prepared to fulfil statutory European and international reporting obligations, including the EU Waste Framework Directive, the EU Waste Statistics Regulation, and EU producer responsibility initiative directives (the Packaging Directive, Waste from Electrical and Electronic Equipment Directive and End-of-Life Vehicles Directive). In addition, circular economy and waste statistics are used domestically to support waste enforcement activities, monitor Ireland’s transition from a linear to a circular economy, calculate the contribution of the waste sector to Ireland’s greenhouse gas emissions, and inform the public about trends in relation to waste and the circular economy (EPA, 2023b).

Advocacy, insights, data and coordination is one of the pillars of the EPA-managed CEP. Through the Circular Insights Series, studies are commissioned on emerging and priority topics to build evidence and fill knowledge gaps to support circular economy policy. The EPA commissioned research to review Ireland’s CMU rate, in particular to analyse related data, interrogate the methodologies involved in data collection and consider alternative datasets. The report, published in summer 2024 (McCarthy *et al.*, 2024), points to the need for care in utilising the CMU rate to inform policy decisions. However, while highlighting the need to improve circular economy metrics, the report also identifies targeted sectoral interventions that would improve Ireland’s CMU rate.

The governance landscape for waste management in Ireland was amended under the WAPCE. The NWPCE proposes a new National Coordinating Group for Waste and the Circular Economy to ensure a collaborative approach to waste and circular economy governance between central government, local government and relevant government agencies. The National Waste Enforcement Steering Committee, which is jointly chaired by the EPA and DECC,

ensures a coordinated approach in respect of waste enforcement between the EPA, central government and local government, primarily through the WERLAs, Revenue and the Gardaí. A further working group set up in 2016, the Waste Capacity Working Group, monitors waste capacity within the state versus waste arising. The NWMPCE (2024–2030) supports the continued role of the RWMPOs in conjunction with the EPA in tracking, reporting and projecting treatment capacities within the state to facilitate contingency planning and inform new development. This group encompasses DECC, local government and the EPA. A related stakeholder group also includes industry representatives.

In order to ensure a coordinated approach to the implementation of circular economy and waste policy in Ireland, both the WAPCE and the CES propose the establishment of a cross-governmental working group, although this had not happened as of autumn 2024. Terms of reference for the group and an indicative work programme are included in the CES. The three proposed work areas for the group are awareness raising in respect of the circular economy, mapping the circular economy and improving policy coherence and policy development, in particular oversight of successive circular economy strategies (Government of Ireland, 2021).

Cross-governmental collaboration also happens across different aspects of circular economy policy implementation. The Circular Economy Communications Group, which had been dormant, has been reactivated under the WAPCE. It includes DECC, the EPA and local government. The group meets regularly and aims to ensure a planned, coordinated and targeted approach to communication with stakeholders and the general public in relation to the circular economy. A further cross-governmental group related to the circular economy is the National Waste Data Network Group. The EPA chairs this group, with members including representatives of local government, DECC and the Central Statistics Office. The group discusses waste data issues, including roles and responsibilities and the validation, compilation and reporting of national statistics on the generation and management of waste in Ireland. National waste statistics are prepared to fulfil a number of statutory and non-statutory European and international reporting obligations.

Lastly, a stakeholder forum, the Waste Advisory Group (WAG), established to assist in the development of the WAPCE, has been asked by government to remain in place to advise on waste and circular economy policy. The group encompasses public, business, environmental and social sector representatives.

Policy responsibility for the bioeconomy is mandated to the Department of Agriculture, Food and the Marine (DAFM) and DECC through the National Policy Statement on the Bioeconomy (Government of Ireland, 2018). Following on from the publication of the National Policy Statement on the Bioeconomy, a cross-governmental Bioeconomy Implementation Group, jointly chaired by DAFM and DECC, was established in recognition of the need for cross-departmental (11 departments) and agency (eight agencies) engagement to guide bioeconomy policy development and implementation. This was followed in 2021 by the setting up of a stakeholder group, the Bioeconomy Forum, and a supportive expert advisory group to the forum.

The Bioeconomy Action Plan, published in 2023 (Government of Ireland, 2023a), identifies governance as one of the seven key pillars of the implementation framework. Under the plan, the Bioeconomy Implementation Group was renamed the Bioeconomy Implementation and Development Group (BIDG) to reflect its implementation activities and also the ongoing need to review policy and keep abreast of national, EU and international developments. As was the case under the national policy statement, a particular objective of the BIDG is to ensure a more coherent approach and greater integration of the bioeconomy in the broader policy landscape (Government of Ireland, 2023a: 12). As well as ongoing policy coherence and coordination activities, the proposed development of a whole-of-government bioeconomy strategy (action 1.7) will be instrumental in this regard. The BIDG is tasked with reporting to government regularly on the progress achieved in implementing the action plan and has reported previously in 2019 and 2023.

The Bioeconomy Forum, the stakeholder group for the bioeconomy proposed in the national policy statement, met for the first time in 2021. Membership encompasses regional and local government, representative organisations, and representatives of industries using biological resources. There is an

independent chairperson. The forum is supported by an expert advisory group that represents nine higher education institutes and research-performing organisations in Ireland. The forum is mandated to liaise with bioeconomy stakeholders across industry, relevant semi-state commercial companies, representative bodies and non-governmental and

community groups involved in the bioeconomy. The forum and expert advisory group were re-invigorated following the publication of the Bioeconomy Action Plan. The forum now has 50 members and will, for the period of the action plan, continue to support the implementation process through an enhanced membership and an annually agreed work programme.

3 Research Findings – Circular Economy and Bioeconomy Governance in Ireland

This chapter assesses the findings of the research in respect of governance of the circular economy and bioeconomy in Ireland, identifying strengths and weaknesses. It is informed by research interviews carried out with key stakeholders and participants in the governance structures, a review of governance arrangements in five European countries and regions identified as being useful comparators for Ireland, and a case study of governance arrangements regarding C&D waste. Further details in respect of the case studies can be found in an IPA working paper prepared as part of the research programme.¹⁰

The analysis below is presented in respect of the six themes identified in Chapter 1 as critical to better governance. Under each heading the circular economy is discussed first, followed by the bioeconomy. Where relevant, considerations in respect of how the two policy areas relate to each other are also discussed.

3.1 Roles and Responsibilities

There are extensive governance structures associated with the circular economy in Ireland. This in part reflects the fact that many of the structures and relationships have evolved from waste governance. However, this change in focus has not been straightforward, as evidenced by the very extensive representation and discussion required to map the governance structures for the circular economy. For example, there was considerable debate as to whether some structures were part of circular economy governance and also about the relative primacy of different groups. While there was greater clarity around bioeconomy governance structures, the impact of these structures was reviewed. Lastly, the way in which bioeconomy governance integrates with circular economy governance was a matter of considerable debate.

The WAPCE indicated that an interdepartmental circular economy working group would be established.

According to the indicative terms of reference included in the CES (Government of Ireland, 2021: 41), the main objective of the group would be to “provide the mechanism for a whole-of-government approach to circular economy policy development, with an emphasis on improving policy coherence”. As of autumn 2024, the group has not been established, although it was intimated during this research that cross-departmental engagement is ongoing, and that the group would be established following publication of an updated whole-of-government CES with more detailed actions and measures, which DECC is required to publish by the end of 2024. However, it was suggested by stakeholders beyond central government that the absence of a circular economy working group has been strongly felt in terms of ensuring a coordinated approach to developing the circular economy in Ireland and a robust approach to governance. In addition, there was agreement at the stakeholder workshop conducted as part of this research that the terms of reference and work programme of the group should go beyond what is currently proposed in relation to policy development and awareness raising, and should focus more on providing leadership and strategic direction in relation to the circular economy, and monitoring and supporting the delivery of the new CES. It was further suggested that a change of name would be desirable to reflect these new responsibilities.

In respect of local government’s role in relation to circular economy governance, the NWMPCCE, published in spring 2024, proposes the establishment of a tripartite group called the National Coordinating Group for Waste and the Circular Economy. The objective of the group, as stated in the NWMPCCE, would be to coordinate the delivery of circular economy measures by local government and liaise with the EPA and DECC in relation to local government’s responsibilities in respect of the CES, WAPCE and CEP. In terms of governance, the local government representatives would report back to the

¹⁰ Available at www.ipa.ie/research (accessed 11 December 2024).

CCMA Climate Action, Transport, Circular Economy and Networks Committee.

Governance structures for the bioeconomy were set out in the National Policy Statement on the Bioeconomy (Government of Ireland, 2018) and so have had a number of years to establish themselves. Research participants were universally positive about the value of the BIDG, commenting that it has raised the level of awareness of participants about the importance of the bioeconomy. Similarly, the support of the forum in inputting knowledge in relation to the bioeconomy was commented on favourably by several interviewees.

The work of both the BIDG and the Bioeconomy Forum in supporting the development of the Bioeconomy Action Plan (Government of Ireland, 2023a) and developing actions included in the plan is widely regarded as having been very constructive, having enhanced the level of engagement and participation, and, more concretely, having encouraged commitment to actions among the organisations involved. However, while the Bioeconomy Action Plan is broadly welcomed, it was suggested by some in central government that there is still a need for a whole-of-government bioeconomy strategy: “You really need a grand vision and strategy and then say from that strategy, here is our action plan. What we have is an action plan, but it’s against the backdrop of a national policy statement”.

This is consistent with the approach taken in other European countries, where a whole-of-government strategy is seen to signal the relevance of the bioeconomy across government, whereas a policy statement speaks primarily to the main policy actors. The need for an overarching long-term bioeconomy strategy to support improved policy coherence is also highlighted in other Irish research (Pender *et al.*, 2024). There is an action in the Bioeconomy Action Plan requiring a whole-of-government strategy to be published by the end of 2025. In addition, the Bioeconomy Action Plan assigns actions to departments and agencies other than DAFM and DECC, and, under pillar one, requires participating BIDG departments to report on how the bioeconomy is being integrated into relevant policies.

In terms of challenges for the BIDG, the grade of those participating – typically at principal officer or assistant principal officer level – was described as an issue by

some research participants, as well as the level of turnover of participants. It was suggested, in particular by stakeholders outside the lead departments, that the grade at which the BIDG is chaired and led sends a signal about the relative level of priority afforded to the work of the BIDG among a range of competing priority issues. Reflecting on this, one participant felt that the bioeconomy was “somewhat of the poor relation to climate, because of the momentum driven by the Climate Action Plan”, while another interviewee commented that the consequence of a lack of representatives at a more senior level is that “it’s perhaps not the people who can really steer resources and policy in the direction of the bioeconomy”. In terms of turnover, it was noted that over the past 2 years a very large number of the participants had changed. This is problematic in view of the complexity of the issues involved and the degree to which it takes time to fully understand the area.

The sharing of the BIDG secretariat between DAFM and DECC is generally regarded as valuable to the effectiveness of the group. The calibre of the secretariat was also widely commented on. For example, the secretariat did a lot of background work with stakeholders, in collaboration with the Bioeconomy Forum, and relevant research institutes and government agencies to identify the challenges they experience in bringing new ideas to the marketplace. The secretariat also held one-to-one meetings with BIDG participating departments and agencies in relation to their commitments under the Bioeconomy Action Plan, to ensure that the right actions were being identified and that there was real commitment to them. This robust preparatory work should support the implementation of actions contained in the plan.

It was widely acknowledged by research participants that there was an over-reliance on the secretariat and that this represented a governance risk. As one interviewee noted, “as things are, a lot of progressing things is left back to the secretariat, to drive things between meetings and then just come and report back to the group”. Actions included in the Bioeconomy Action Plan, in particular under the governance and awareness, and knowledge and skills pillars, seek to build capacity and ensure that responsibility for developing the bioeconomy, although led by DECC and DAFM, is shared across government. However, concerns remain due to the lack of seniority of

those leading and participating in the BIDG and, consequently, their ability to influence debate and decisions in their own organisations.

Coherence between bioeconomy policy and circular economy policy was an undercurrent throughout the whole research programme, in particular in terms of roles and responsibilities. While the many areas of parallel interest are acknowledged, there are concerns among some working in the bioeconomy area that their field does not receive the same level of prominence. There have been some improvements in policy coherence between the two lead departments, DECC and DAFM. For example, the Climate Action Plan 2024 (Government of Ireland, 2024) positions the bioeconomy as a driver of more sustainable economic development. Furthermore, the National Policy Statement on the Bioeconomy (Government of Ireland, 2018) and the Bioeconomy Action Plan (Government of Ireland, 2023a) give prominence to the circular economy, and it is anticipated that the forthcoming CES will similarly give prominence to the bioeconomy.

However, the issue of policy coherence with wider government remains very pertinent. Research by Pender *et al.* (2024) that reviewed drivers of and barriers to policy coherence for the bioeconomy cites a number of constraints. Their findings in respect of policy coherence are very similar to the findings of this research on governance issues more generally. They highlight a number of constraints, which include a lack of integration of the bioeconomy across government, persistence of siloing and bioeconomy leadership gaps, wide-ranging resourcing issues, including a lack of sufficiently knowledgeable bioeconomy policy analysts in relevant departments, a lag between regulation and bioeconomy innovation, and a need for better communication in relation to the bioeconomy.

Within this research, there was a level of frustration evident among some interviewees, who referred to persistent levels of seeming unawareness of the relevance and potential of the bioeconomy across government, even within DECC and DAFM, and a general lack of embeddedness of the bioeconomy within policy divisions in relevant departments. In addition, BIDG members in line departments commented that decisions in relation to bioeconomy policy are complex, and that on occasion they do not believe that they have all the information they need to make informed decisions. For example, one research

participant noted that “there isn’t friction in terms of outcomes sought, [but] there are challenges”, citing, by way of example, the tension between commercialising bio-resources and using bio-resources to decarbonise industry and, related to this, the need for consistency with land use and biodiversity policy.

This challenge is consistent with the conclusion of Pender *et al.* (2024), who refer to the need for the bioeconomy to go beyond low-ambition coherence, which focuses mainly on improving consistency across sectors and minimising trade-offs, and instead aim to design and deliver synergistic solutions that will achieve more transformative outcomes. However, referencing Nilsson and Weitz (2019), they note that this will not be achieved by focusing on practical actions alone but also requires systemic and cultural shifts.

The Bioeconomy Action Plan recognises the importance of policy coordination and coherence, and the actions in the plan are aimed at addressing these issues. However, a central finding of this research, strongly supported by participants at the research workshop, is the potential for overlap in governance arrangements between the circular economy and bioeconomy. This would facilitate mutual learning, to the benefit of both policy areas, while also avoiding duplication of effort in areas of common purpose. For example, one research participant noted: “I do think if you look again at governance, then where is the Bioeconomy Implementation Group and the forum relative to the circular economy?”. Another participant commented that “the Circular Economy Strategy doesn’t really feature the bioeconomy”. Reflecting on ways this might be addressed, one participant suggested: “I think there’s a role where governance between the circular economy and bioeconomy should be overlapping ... they are not just one and the same thing. But nonetheless, on the regulatory side, and on the promotion and support side, there’s a lot of things we could do jointly”.

3.2 Building Capacity

Capacity is predominantly concerned with people – understanding an organisation’s needs and responding effectively (Murray, 2007). Ultimately, reviewing capacity involves assessing whether or not the governance structures and the constituent individuals and organisations are fit for purpose and can deliver

Case study vignettes: implementing the circular economy and bioeconomy in comparative EU countries and regions

Finland

The Finnish Bioeconomy Strategy is implemented collaboratively by several ministries. The Ministry of Economic Affairs and Employment coordinates the work as the responsible ministry. The ministry appointed a steering group and a secretariat for the strategy. The steering group is tasked with monitoring the progress of both the strategy and its measures. Implementation is also supported through the research and other activities of the national Bioeconomy Panel comprising bioeconomy stakeholders, which will continue as a broad-based dialogue and engagement group.

The Ministry of Economic Affairs and Employment is tasked with monitoring the impact of the Bioeconomy Strategy. The first assessment will be published in 2024 and subsequent assessments during each government term. The impact of the strategy is monitored using a set of statistics produced in cooperation with the Natural Resources Institute Finland and Statistics Finland. The indicators for monitoring the implementation of the strategy’s key objectives are the bioeconomy’s associated value added, investments, export of goods and levels of employment. In 2021 the bioeconomy was worth €27 billion or 12% of the national economy.

Flanders

The policy framework provided in Flanders by the Flemish Government’s whole-of-government strategy, Vision 2050, is important in providing policy coherence. Circular economy policy is clearly linked to related policy areas such as industry, lifelong learning and social cohesion. The Belgian National Energy and Climate Plan 2021–2030 links climate and circular economy objectives, highlighting the prominence and urgency of both policy areas.

In Flanders, waste management, soil remediation and the transition towards the circular economy are the responsibility of OVAM (Public Waste Agency of Flanders). The cross-agency initiative Circular Flanders, coordinated by OVAM, provides a clear institutional “home” for driving circular economy actions. After early pilot initiatives, the need to move from trials to scale-ups and generalising best practices was recognised as a priority for Circular Flanders.

The Circular Economy Policy Research Center (part of Circular Flanders) aims to ensure that research carried out across third-level institutions and state agencies is coordinated and linked to priority agendas.

The Circular Economy Monitor is an important initiative in terms of public reporting and communications on progress towards the desired outcomes of circular economy policy. An emphasis on outcome indicators, such as modal split of transport, employment in the circular economy and material footprint of the building stock, provides a sense of the degree of progress being made.

Estonia

Local government plays an important role in the transition to a circular economy and bioeconomy in Estonia. Local municipalities are closest to businesses and consumers and are responsible for waste management. Furthermore, they raise awareness about circularity and provide good examples on how to procure environmentally friendly goods and services. Support from local government is also crucial in the development of Estonia’s bioeconomy. Preparing regional road maps, training local officials, empowering county development centres and supporting incubation centres are all part of the government’s approach to grow the bioeconomy.

Source: O’Riordan *et al.* (2024).

on the goals that they have been asked to achieve (Boyle, 2020). Research participants were asked what capacity issues they believed impacted governance of the circular economy and bioeconomy. The main focus of enquiry was staffing, competencies, and training and development; however, interviewees were additionally asked about any broader capacity issues.

Within central government, the resources dedicated to the circular economy and bioeconomy have increased since the publication of policy documents in respect of both areas. DECC has enhanced the resources dedicated to the circular economy and the circular economy is also specifically mentioned in the title of one of the department's junior ministers.¹¹ Department officials also indicated that the circular economy is regarded as a strategic priority of the department and that, while not as prominent as climate policy, it is recognised as an enabler of climate policy, and so resources have increased. However, some external observers do not regard the balance in the same way, suggesting that the circular economy is not being progressed at the rate it should be.

The bioeconomy has modest resources within DECC, with a principal officer, assistant principal and administrative officer, who also have other responsibilities. It is located under a different assistant secretary to the circular economy. Within DAFM, there has been a focus on the bioeconomy since the publication of the first EU policy document on the bioeconomy in 2012. However, since the publication of the National Policy Statement on the Bioeconomy in 2018, DAFM staff have taken on policy roles in relation to the bioeconomy in line with the mandate for the department in the bioeconomy policy statement. The bioeconomy is located in the DAFM's Research, Food & Codex unit.¹² There is an assistant secretary lead, and principal officer, assistant principal and administrative officer equivalents in place who are responsible for the bioeconomy. While it was suggested by interviewees that the resources within both DAFM and DECC in respect of the bioeconomy need to be expanded, it was also commented that resourcing needs will become fully clear only when

there is clarity in relation to what is required to deliver actions in the Bioeconomy Action Plan.

From the perspective of implementing circular economy policy, both local government and the EPA have seen their responsibilities expand since the publication of the WAPCE. For the EPA, the CEP has a broader remit and range of objectives than the National Waste Prevention Programme, which it replaced. As a result of these changes, the EPA now has a programme manager overseeing the circular economy. The need for an increase in local government resources to support the delivery of the NWMPCE is set out in volume three of the NWMPCE (Local Government Ireland, 2024). In particular, the plan identifies that both financial and human resources are required to accelerate the transition to a circular economy, citing areas such as communication, engagement, regulation and investment. In addition, both the circular economy and bioeconomy have implications for economic and enterprise development activities within local government.

It was accepted during this research that there is a need for local government to reflect internally on "the integration of front-line staff on water, climate change, waste and circularity, biodiversity, etc." and that an expansion of the remit of existing local government shared services, such as the Climate Action Regional Offices, to incorporate the circular economy and bioeconomy could be examined. However, the point was also made that it is necessary to have national governance structures resolved first before looking at sectoral structures.

It is also appropriate to reflect on the overarching relationship between central government and local government in Ireland. Government in Ireland is highly centralised. Despite recent increases in the local government budget, its share of current government spending is only about 8%, one of the smallest shares across the EU and OECD (Turley and McNena, 2024). In addition, local government and defence are the only areas of the public service where employment levels in 2023 were below 2008 pre-financial crisis levels (O'Leary *et al.*, 2023). The Department of Housing,

11 In the government in place from 2020 to November 2024 there was a Minister of State in DECC with responsibility for communications and the circular economy.

12 The Codex Alimentarius is a global food standards programme established by the Food and Agriculture Organization and the World Health Organization. Its primary objective is to ensure safety, quality and fairness in food trade across nations.

Local Government and Heritage has developed a Strategic Framework for Workforce Planning in local government, published in autumn 2024. The purpose of the review is to set out the strategic challenges and opportunities facing local government that set the context for the future direction and development of its workforce, and to provide a framework to inform future staffing decisions.

In terms of capacity across the public service to implement the circular economy and bioeconomy more broadly, research participants from central government noted that taking information back to their own organisations and encouraging engagement and action can be challenging. In part this reflects the busyness of government, with the bioeconomy needing to compete with other priorities. However, a further consideration is the complex, technical and wide-ranging nature of bioeconomy policy. As one research participant noted, “the bioeconomy cuts across many sectors, and the supports required differ across the sectors. Bioeconomy doesn’t fit easily in any [one] sector, it’s difficult to conceptualise in policy terms”.

Those with direct responsibility for the bioeconomy in DECC and DAFM have sought to increase capacity with BIDG participating organisations. In addition, the Bioeconomy Action Plan (Government of Ireland, 2023a) requires the two lead departments to develop a bioeconomy policy guidance document over the life cycle of the plan. However, while coaching and building capacity in relation to the bioeconomy is a prominent aspect of the secretariat’s role, it was noted that the secretariat is also required to provide support in respect of the more generic activity of cross-governmental collaboration and policy coordination. This goes beyond the role of the secretariat and, while it reflects a wider civil service challenge, impacts on the implementation of circular economy and bioeconomy policy.

Awareness raising and sharing information about circular economy and bioeconomy policy is a prerequisite to achieving a consistent approach to policymaking across government and, ultimately, delivering on government targets. At present, notwithstanding the fact that the CES (Government of Ireland, 2021) and the National Policy Statement on the Bioeconomy (Government of Ireland, 2018) emphasise the importance of including the circular

economy and bioeconomy in all other relevant government policies, interviewees described the task of getting real action across government as “extremely challenging”. As noted above, the Bioeconomy Action Plan (Government of Ireland, 2023a) requires government departments to reflect the bioeconomy in all related policy areas. However, according to research participants, identifying the bioeconomy as relevant, for example to economic or rural development or climate action, is only the starting point. The real challenge is turning this integration into meaningful action.

In 2021, the BIDG reviewed government policies to see how the bioeconomy was represented, concluding that there is very little consistency in thinking across government on the bioeconomy. According to one interviewee, “some people, even in our own department, just don’t understand that we should have been involved ... the signal there is that it’s not really important or it’s not for now, it’s for the future”. Expanding further on this point, it was suggested that the bioeconomy is still perceived in some areas of the civil service as a series of research or pilot projects, rather than a productive area of the economy that also affords significant potential for enhancing Ireland’s competitiveness and circularity rate and addressing climate issues. As one participant commented, “in my network, people see bioeconomy and think rural and don’t think beyond it, but once [it is] explained to them, they are more enthused about it”.

However, beyond the need for more information and knowledge in relation to the bioeconomy, it was suggested that there is perhaps a more deep-seated capacity and governance issue that relates to the ability of officials to look beyond their own business plan and see the synergies not only across other environmental policies, but also encompassing economic and innovation policy, rural and community policy and beyond. In the words of one participant, “that ability to connect it as a topic to what people are working on seems to be a capacity gap or capability gap or an understanding gap. I don’t know why people aren’t seeing it as hugely relevant or hugely useful yet to their agenda. I would see it as a real solutions piece for a lot of the climate action things that we talk about, a lot of the regional economic development we talk about, a lot of the rural decline that we talk about. So, it’s how to embed it in people’s mindsets when they’re working on those other policy areas, that seems to be

a capacity gap". These comments are an example of a deficit in Ireland's policy process that was identified by the OECD (2023: 2) in a review of policy development in the public sector in Ireland. The OECD concluded that "the culture of collaboration across departments could be strengthened, particularly to increase cross-departmental communication, visibility and the consideration of the impacts proposals might have in other policy areas".

Beyond central government, there was a suggestion among some interviewees of an inconsistent approach to the bioeconomy across local government, with some local authorities regarded as "more progressive" than others in terms of supporting the bioeconomy. Reference was made to the EU-funded ROBIN project,¹³ which aims to support the development of the bioeconomy on a regional basis. Ireland's Southern Regional Assembly is a partner in this programme. It was also suggested that the strong engagement between central and local government in respect of the circular economy, which has evolved from their relationship in respect of waste management, could perhaps be leveraged to also support the bioeconomy. The need to better integrate the bioeconomy with local government is an action point within the Bioeconomy Action Plan (Government of Ireland, 2023a).

3.3 The Approach to Regulation

Regulation, in effect the laws and rules associated with a particular policy area, is an important part of governance (Levi-Faur, 2011; OECD, 2011). A robust regulatory framework that is appropriately enforced can support the implementation of policy and the achievement of desired outcomes, but the opposite is also true. A particular challenge in respect of the circular economy and bioeconomy is that it is a new and rapidly evolving policy area, and stakeholders have indicated that, for the bioeconomy, innovation is frequently running ahead of regulation. The safe use and reuse of resources in both policy areas is of paramount consideration.

The regulatory framework for the circular economy is overseen by the EPA. Specific obligations include end-of-waste and by-product concerns, regulation of industry and waste management activities, and regulation of chemicals and the non-toxic environment.

Circular economy techniques often involve altering resource flows towards reuse/recycling of products, components or materials after their initial productive life. Much of this would traditionally be regarded as waste, and its movement is tightly regulated. There is a challenge to accommodate innovation and trialling of new options and processes without compromising critical human health and environmental protections. The wide regulatory experience of the EPA was acknowledged during the research, and also its commitment to identifying and responding to regulatory issues in respect of the circular economy.

In the course of this research, while there were lots of general comments about regulation keeping up with innovation and an awareness of the need to improve the regulatory environment, it appeared to be difficult to identify the precise areas where regulation is required or is deficient. It was noted, for example, that the BIDG had looked at regulation, but, as one interviewee put it, "didn't really bottom out on the issue". Similarly, a Bioeconomy Forum participant commented that "we found that people talked quite generally about the issue [regulation], but they found it quite difficult to identify specific challenges". However, by following up with members on a one-to-one basis, some greater clarity did emerge. In this regard it was noted that an initial issue is signposting which regulations are relevant and who the key personnel to contact are. Furthermore, the breadth of the bioeconomy means that in many instances innovative companies need to engage with multiple regulations, and that there is no "one stop shop" to advise on this. Under the Bioeconomy Action Plan (Government of Ireland, 2023a), there is a proposal to commission a project to carry out a full regulatory analysis in respect of the bioeconomy. It was also noted that the EPA, through its research budget, is commissioning research in respect of regulatory issues, in particular agri-food issues.

The importance of aligning bioeconomy regulation with regulation in respect of the circular economy was also highlighted by the research. In addition, and broadening the perspective on regulation, planning regulations were also cited as a barrier to innovation, with one interviewee noting that "for companies who are trying to set up a new facility (e.g. a bio refinery) or new technology, it's just not a streamlined process,

¹³ <https://robin-project.eu/> (accessed 11 December 2024).

different local authorities have different rules or at least different interpretations of planning rules”.

3.4 Stakeholder Engagement

Involving stakeholders in developing and implementing policy is an important aspect of governance. It can be particularly important when addressing complex policy issues where “the definition of the problem is clear, but the solution is not and therefore learning and discussion are required by both the governmental managers and the stakeholders they lead” (Head and Alford, 2015: 717). Specifically, in the case of policy forums, it has been found that these can lead to better decision-making because of “the contribution of expert and stakeholder knowledge that is otherwise inaccessible to decision makers” (Fischer and Leifeld, 2015: 3). Stakeholder engagement across government and also with the research community, industry and the general public, is prominent within the circular economy and bioeconomy. There is a strong awareness of the importance of learning from the research community and also those involved in innovation and industry.

The WAG was set up by DECC to facilitate stakeholder consultation in the preparation of the WAPCE (Government of Ireland, 2020). Subsequent to the WAPCE being published, a commitment was made by DECC to maintain the forum to support ongoing implementation of the plan. Research participants from DECC reported that they find the group very helpful and would like to expand it to include more organisations that are not specifically involved in waste or the circular economy. However, other participants described the WAG, which has over 50 members, as “unwieldy” and primarily focused on information sharing, rather than engaging with policy implementation in a more meaningful way. It was suggested that there needs to be further reflection on the objectives of the group and that a clear schedule of priority topics for discussion needs to be identified. In contrast, industry-specific stakeholder groups, for example the Textiles Advisory Group, appear to have greater clarity around their role and have inputted into policy effectively. Similarly, engagement with stakeholders in respect of specific initiatives, such as the bottle and can deposit return scheme, is regarded as having been successful.

Within local government, the development of the NWMPCE involved extensive stakeholder consultation, and this will continue during the implementation phase. However, the sector drew attention to the importance of targeted engagement, that is, engaging on a “need to” basis and targeting appropriate people to achieve action in those areas. As one interviewee expressed, “there is an appropriate level of engagement at each level, you are not unnecessarily engaging people who don’t have the possibility to have an impact on what you are trying to achieve”.

Stakeholder engagement in respect of the bioeconomy is generally perceived to be both extensive and constructive. This engagement has now been in place over a number of years, predating the National Policy Statement on the Bioeconomy (Government of Ireland, 2018). However, it has been approached in a far more constructive way since the establishment of the Bioeconomy Forum. The Bioeconomy Forum is mandated, through the National Policy Statement on the Bioeconomy, to liaise with bioeconomy stakeholders across the breadth of industry, relevant semi-state commercial companies, representative bodies and non-governmental and community groups that underpin the sustainable development and evolution of the bioeconomy. One central government interviewee, commenting on the more structured approach to stakeholder engagement since 2021, noted that “there are loads of people in the bioeconomy already, we want to approach these people and join up the thinking, ‘how can we help you to do your job more easily and make connections for you’”. In addition, the Climate Action Plan 2024 (Government of Ireland, 2023b) references the forum, committing government “to support the Bioeconomy Forum in its development of policy recommendations in future iterations of key policies and strategies”.

Attendance is good at meetings, and the meetings are regarded as well organised and chaired. One interviewee noted that the forum has given a voice to participants and has been very useful from a networking point of view, putting people in contact “so that there’s greater exchange of information”, adding that “I do think it’s creating a structure where people know there’s a place to go in terms of interfacing with government, interfacing with academics, industry, where we can go to bring these things”. Other participants referred to “the opportunity to be challenged and to challenge others”, as well

as “learning from each other and encouraging collaboration”. The forum has also promoted good relations with the agricultural sector, with one departmental interviewee commenting that “the forum has good relations with the agricultural sector, genuine actors who want to change, some don’t, their role is to protect, but for example ICOS [the Irish Cooperative Organisation Society] and the co-ops are really involved and interested, reduced emissions, alternative incomes, and pivot from dairy. Some are very into it”.

Consultation and engagement with private sector companies was also commented on favourably by departmental officials, including the role of Enterprise Ireland in facilitating this. For example, one departmental interviewee noted that “most of this [engagement] is industry led. We are learning a lot more from industry than we are from government; there is so much happening out there, meeting stakeholders and surveying them is the best way to keep up to date”. However, it was also noted by one departmental research participant that Enterprise Ireland’s activities in respect of the circular economy are more prominent than those related to the bioeconomy.

During the development phase for the Bioeconomy Action Plan, an open consultation process managed by DECC was held. Fifty submissions were received, with one-third of these being individual submissions. However, it was suggested by one research participant that engagement with individual households, communities and farmers is likely to prove more beneficial at present, rather than “a generic, open consultation on a topic that doesn’t mean a huge amount to many people yet”. A commitment in the Bioeconomy Action Plan to develop a targeted communications campaign, highlighting sectoral case studies to improve understanding of the bioeconomy for stakeholders, would appear to represent the sort of action that is required. Furthermore, lessons can be learned from other environmental policy areas on how this might best be done, for example water policy. The Local Authority Water Programme (LAWPRO) and the Agricultural Sustainability Support and Advisory Programme have both found that direct engagement with identified communities and individual farmers is beneficial (O’Riordan *et al.*, 2022).

The forum has also played a strong role in informing the development of the Bioeconomy Action Plan,

with one departmental interviewee commenting that stakeholder engagement is “for sure resulting in better policy”. The creation of an expert advisory group that supports the work of the forum is regarded as a very positive initiative, as this grouping provides expertise on specific topics and issues, and the connection through the forum facilitates information sharing and a collaborative approach. However, it was also suggested that the forum needs to raise its profile and reinforce its role and contribution to the implementation of bioeconomy policy. Initiatives in this regard are included in the Bioeconomy Action Plan (Government of Ireland, 2023a). Their timely implementation is regarded as paramount by members of the BIDG.

Lastly, the perennial challenge of engaging with the wider public was also noted by research participants, and the low level of popular awareness in relation to the circular economy and bioeconomy. During 2024, DECC provided funding to the Rediscovery Centre to develop a 5-year programme in respect of public engagement; however, it is too early to determine the impact of this initiative. Within local government it was noted that environmental education and awareness has been part of local government’s mandate for nearly 30 years, with most local authorities having dedicated environmental awareness officers, whose role in this area could be expanded. In respect of all of these areas, it is acknowledged that there are potential synergies across environmental policy areas that need to be leveraged, and that a joined-up approach to communication that encompasses all aspects of sustainability is likely to achieve more traction with members of the public.

3.5 Monitoring and the Use of Data and Evidence

The need for robust data and evidence is widely accepted by all involved in developing and implementing circular economy policy in Ireland. There are clear targets in relation to waste, recycling and circularity that have been set out in Irish policy. The EPA manages a range of statistics on waste generation and management, including recycling rates, and publishes its *Circular Economy and Waste Statistics Highlights Report* every 2 years (EPA, 2023a). However, the European Environment Agency (2022) notes that there has been no detailed assessment of Ireland’s progress in relation to the

Case study vignette: C&D waste and the circular economy

Both C&D activities produce significant quantities of waste. In 2021, in Ireland, C&D waste accounted for 60% of waste arisings in 2021 (EPA, 2023b). Under Project Ireland 2040, C&D waste is set to increase significantly. However, such waste is also very suitable for reuse if transformed into by-products or end-of-waste material that can replace primary resources for new construction projects. However, this must be done within existing waste regulations or regulations amended to accommodate new innovations.

Soil and stone, which make up most of C&D waste, offer the greatest potential. The European Communities (Waste Amendment) Regulations of 2011 (as amended) allow a waste to be reclassified as a by-product or an end-of-waste material if it meets a number of specified criteria. In consultation with the local government sector and a wide range of construction stakeholders, the EPA recently finalised national by-product criteria for greenfield soil and stone, which the NWMPCE estimates could reduce C&D waste by as much as 2.8 million tonnes per annum, thus significantly increasing the circularity of this material. A substantial quantity of waste concrete and brick is also generated through demolition in Ireland each year. Recycled aggregate can now be produced from this material under the national end-of-waste criteria recently developed by the EPA, with the NWMPCE estimating that this can reduce C&D waste by a further 50,000 tonnes per year.

Government and the Irish construction sector have engaged through the Construction Sector Group (CSG) since its establishment in 2018. The CSG and its subgroup on innovation and digital adoption, which includes a wide range of relevant stakeholders from both government and industry, are focused on the development of modern methods of construction, digitisation of the planning application process (with local government) and the further development of building information modelling. Studies include the use of bio-based construction materials in place of traditional fossil-based products, for which regulatory amendments are sometimes required. In collaboration with DECC, a cross-cutting consultative panel on sustainability has been working on a construction sector circular economy road map, to be published in 2024.

EU’s Circular Economy Monitoring Framework. In particular, there is a need to gather data and report on a greater range of indicators, in order to assist in monitoring and reviewing Ireland’s progress in respect of targets for waste and the circular economy.

The circularity rate, which is approximated by measuring the share of material resources that come from recycled waste materials, is seen as a consistent measure of progress towards a circular economy. However, it can be challenging to accurately measure. According to the European Environment Agency (2022), Ireland’s low rate (1.8%) could be partly attributed to the country’s economic sector profile. It could also be influenced by the volume of natural resources extracted to meet National Development Plan targets, resulting in more extensive use of primary natural resources for construction than in other EU countries (e.g. the Netherlands) and a higher level of C&D waste. The OECD (2022) also points to demographics, with Ireland’s population growing almost twice as fast as the OECD average,

and construction growth also significantly outpacing the EU average. Ireland’s circularity rate, and factors contributing to it, have been the subject of two research studies commissioned by DECC (Circle Economy Foundation, 2024) and the EPA (McCarthy *et al.*, 2024).

In relation to the bioeconomy, there was an overall sense from the research participants that, while good progress has been made in developing an evidence base in respect of the bioeconomy, much still remains to be done. It is recognised that indicators on the economic, social and environmental benefits of the bioeconomy are needed to give a balanced view of progress. Data are required on, for example, bioeconomy employment, income, contribution to rural regeneration and the bioeconomy’s role in greenhouse gas emission reductions. There are a number of research projects of relevance in this regard; for example, research by Grealis and O’Donoghue (2015) on the development of the Bio-Economy Input Output model, which can be used to analyse these linkages

between the bioeconomy sectors and the wider economy. In addition, a report for the Marine Institute (Norton *et al.*, 2022) developed a baseline in terms of data on the blue bioeconomy. There were also two research projects under way in 2024; the InformBio¹⁴ project is about the development of a bioeconomy monitoring framework, and DAFM has recently funded the BioValue project, led by the University of Galway, to develop measurements for the bioeconomy using economic indicators. However, from a central government perspective, there is a lack of clarity in relation to data, with one interviewee commenting that “there is a definitional question, what is and isn’t a bio resource ... and how the bioeconomy is measured determines the data”. This interviewee also called for the identification of key performance indicators that link to policy objectives.

For both the circular economy and the bioeconomy, monitoring also needs to link with and inform ongoing and effective evaluation and review of the implementation of policy. For the former, this encompasses measures set out in the WAPCE and current and future iterations of the CES. At present, there is a lack of clarity in respect of who has oversight of the implementation of circular economy measures. There is greater clarity in respect of the bioeconomy, with the Bioeconomy Action Plan indicating that the BIDG “will support the implementation of the action

plan” and “will meet quarterly to ensure delivery on priority actions and to monitor progress across the action plan” (Government of Ireland, 2023a: 36).

In line with this commitment, a first round of reporting in respect of the implementation of the Bioeconomy Action Plan was presented to the BIDG in spring 2024. However, an ongoing challenge will be to ensure that there is meaningful action behind the reporting. Experience from monitoring the implementation of other environmental policies (Boyle *et al.*, 2021; O’Riordan *et al.*, 2021) has shown that a “tick the box” approach to performance management may allow organisations to focus on easier-to-deliver but low-impact actions over other more challenging actions. While it may on occasion be appropriate to prioritise more easily achieved objectives to generate momentum – “low-hanging fruit” – ultimately, effective policy implementation and the achievement of a “step change” in outcomes requires meaningful engagement with measures and monitoring of the delivery of objectives. In addition, effective monitoring requires a balance to be struck between allowing organisations autonomy and time to focus on implementation rather than reporting, and maintaining the discipline of external scrutiny. Ultimately, good governance requires clarity and accountability in respect of performance indicators and monitoring structures. In this way, those involved in the circular economy in Ireland will have

Case study vignette: monitoring the development of the circular economy in Finland

Finland, through its circular economy programme, is the first country in the world to set a quantitative target for the use of natural resources. According to its circular economy programme, total domestic consumption of primary raw materials will not exceed the 2015 level in 2035; resource productivity will double from the 2015 situation by 2035; and the CMU rate will double by 2035.

Progress in respect of the circular economy is monitored by Statistics Finland. Consistent with the concept that transition to a circular economy requires comprehensive system change, it identifies the need for development across all product and service value chains. To support understanding, the circular economy is presented as a set of activities that are pivotal from the perspective of a product or service life cycle. There are eight activities, encompassing a total of 18 indicators.

For both the circular economy and the bioeconomy, cross-governmental working groups have been established to oversee implementation of policy.

Sources: Statistics Finland (https://www.stat.fi/tup/kiertotalous/kiertotalousliiketoiminnan-indikaattorit_en.html; accessed 16 December 2024) and O’Riordan (2024).

¹⁴ <https://informbioproject.ie/informbio-project/> (accessed 11 December 2024).

evidence of what works and, ultimately, a sense of progress towards the desired goals.

3.6 Knowledge Generation and Sharing

Advocacy, insights, data and coordination is one of the pillars of the EPA-managed CEP. Through the Circular Insights Initiative, studies are commissioned on emerging and priority topics to build evidence and fill knowledge gaps to support circular economy policy. In addition, for the circular economy, not-for-profit organisations such as the Rediscovery Centre and initiatives such as Circul@ire, a public–private partnership that supports industry in developing and implementing circular approaches, have helped promote learning and knowledge. Circul@ire, in collaboration with its secretariat, Irish Manufacturing Research, has been awarded funding by DECC to develop a proposal for a centre for excellence for circular innovation to ensure more effective scaling of industry-led circular innovation.

In relation to the bioeconomy, the EPA, DAFM and BiOrbic, a national collaboration of researchers, were referenced favourably for their contribution to developing and supporting an evidence base for the Bioeconomy Action Plan and supporting the work of the BIDG and the secretariat. The secretariat of the BIDG has put a particular emphasis on knowledge generation and sharing, which has been appreciated by members. One interviewee said: “I couldn’t fault the BI[D]G for its inclusion of data evidence and science, it’s very plugged in to knowledge transfer ... that’s down to a really good secretariat”.

The existence of structures does not in itself guarantee knowledge sharing and learning. However, the evidence from the BIDG and Bioeconomy Forum is that where this objective is prioritised by the secretariat, a degree of momentum can be generated in relation to enhancing participants’ knowledge. The BIDG has also prioritised the building of an evidence base in respect of the bioeconomy in Ireland, with projects such as InformBio aiming to provide a clear road map for Ireland towards a sustainable bioeconomy along with the tools to measure progress towards that objective.

Joining up all research and innovation in respect of the circular economy is a prominent focus of DECC,

with a research participant from the department commenting that “there is some very interesting work at local level but it’s not consistent, and communication and knowledge transfer are inefficient”. The research in respect of a centre for excellence for circular innovation is aimed at developing a response to this challenge. Other European countries have established organisations, with a range of governance arrangements, with the specific remit of promoting and sharing knowledge on the circular economy.

In addition, sharing knowledge more widely than the immediate circular economy governance structures remains a challenge. General knowledge about the circular economy and bioeconomy among department and agency staff or industry not directly engaged in the area is seen as limited. Several interviewees noted this as an issue, with one saying that “[There are] people working in climate that aren’t aware how important the circular economy and bioeconomy are”. The Circular Economy Communications Group, which encompasses the EPA, DECC and local government, has been established to promote a coordinated approach to sharing information across government about the circular economy. It was also announced in 2024 that the Rediscovery Centre has been given a 5-year contract in respect of circular economy public engagement.

The work of the Climate Communications Coordination Committee (CCCC), chaired by the Department of the Taoiseach (DoT) and reporting to the Climate Action Delivery Board, can be a source of learning in this regard. The CCCC was established to support clear and consistent climate communications across all of government. The committee has agreed a communications strategy that provides cohesive direction to all government departments and agencies. The CCCC works closely with the National Dialogue on Climate Action, which is led by DECC with secretariat support from the EPA, to ensure that effective communications are underpinned by research, insights and engagement (Government of Ireland, 2023b). The Bioeconomy Action Plan includes a commitment to developing a targeted communications campaign to increase public and stakeholder engagement and understanding and awareness of the bioeconomy. The BIDG are engaging with the CCCC in relation to this.

Case study vignette: promoting the circular economy among stakeholders and the general public

Zero Waste Scotland is the Scottish Government's main agent in its drive for a circular economy. It was established in 2010 and was originally managed by the UK-wide Waste and Resources Programme on behalf of the Scottish Government. In 2014, it became an independent company – a not-for-profit environmental organisation – funded by the Scottish Government. Zero Waste Scotland now falls within the same operating framework as a directorate public body in terms of budget, planning, finance and procurement. Discussions are currently under way on transitioning Zero Waste Scotland to agency status.

Zero Waste Scotland's role is to inform policy and motivate individuals and businesses to move towards a sustainable economy. It encourages respect for limited natural resources, responsible production that extends the life of products and services, and maximising the value of material currently considered as waste. Zero Waste Scotland is also active in the areas of capacity building, awareness raising and investment decisions that are based on circular thinking.

Sitra, the Finnish Innovation Fund, is an independent public foundation with the mission of supporting a fair and sustainable Finnish economy and society. It functions both as an investment company and as a think tank, with much of its research being future oriented. Sitra's operational independence is supported by the fact that it reports to the Finnish parliament rather than direct to government. Its funding model also enhances its independence, as its annual budget is derived from the profits of its endowment. Sitra also has statutory recognition, with its duties set out in legislation.

Source: O'Riordan (2024).

4 Research Analysis – Circular Economy and Bioeconomy Governance in Ireland

Drawing on the evidence presented in Chapter 3, this chapter indicates how governance of the circular economy and bioeconomy in Ireland could be improved. As a starting point, it is useful to reiterate the objective of good public governance. Public governance relates to the processes, procedures and institutions involved in public management; it supports better public management and the delivery of outcomes for citizens (OECD, 2022; Hughes, 2023).

Key objectives for both policy areas are climate commitments contained in the European Green Deal, in particular the target of reducing greenhouse gas emissions by 55% by 2030. However, the potential of the circular economy and bioeconomy to support sustainable economic development, open strategic autonomy and regional and local development is also being given increasing prominence.

For both the circular economy and the bioeconomy there are challenges in terms of policy. Both are evolving policy areas, emerging to an extent from well-established policy spheres, namely waste management, natural resource management, agriculture and research and innovation policy. This means that there is a need to build knowledge and evidence to inform policy. Furthermore, as noted above, both the development and the implementation of policy require cross-cutting engagement across government. However, in reviewing policy development and implementation in general in Ireland, the OECD (2023: 51) commented that the culture of collaboration across departments and coordination of work programmes could be further strengthened. To address this, it recommends developing a broad policy capability infrastructure and vision supported by strong leadership to strengthen policy development, a staff with the right technical skills, and relevant tools and processes. These findings are relevant to circular economy and bioeconomy policy.

An important basis for improving governance of the circular economy and bioeconomy in Ireland is sound policy. In this regard, the forthcoming CES needs to be ambitious in its approach, and include wide-ranging

measures in respect of the circular economy, particularly in relation to the reuse of materials across all sectors of society. The strategy also needs to reflect the close parallels with bioeconomy policy. Rather than representing the bioeconomy as a discrete area, there is an opportunity to reflect bio-based innovations and solutions in a range of circular economy priority areas, for example packaging, plastics, textiles, food, construction and building. This would considerably enhance policy coherence between the two areas.

More specifically for the bioeconomy, the publication in 2025 of a whole-of-government bioeconomy strategy will help build on the measures in the Bioeconomy Action Plan (Government of Ireland, 2023a). In particular, the strategy will reinforce one of the objectives of the Bioeconomy Action Plan: to make the bioeconomy relevant across government. The plan continues to be seen as a rural, research or agricultural initiative, rather than a means of creating economic, social and environmental opportunities in a sustainable manner. There are a range of communication actions included in the Bioeconomy Action Plan; however, evidence from the case studies conducted as part of this research on practices in other European countries supports the value of having a whole-of-government strategy and vision in order to communicate across government the importance of the circular economy and bioeconomy.

4.1 Roles and Responsibilities

There is a need for greater coherence between circular economy policy and bioeconomy policy. This is recognised in the Bioeconomy Action Plan and needs to be further reinforced in the forthcoming updated CES and in the Bioeconomy Strategy. The scale of what needs to be done in each policy area and the importance to the bioeconomy of retaining a distinct identity means that separate policies are required. However, the clear parallels between the two policy areas and their connection to climate policy, the desirability of communicating a joined-up approach to stakeholders and the significant overlap in terms

of work programmes and personnel all point to the importance of greater coherence between the two areas. Overlap in terms of the governance structures will further support this objective. This conclusion from the research was discussed and validated at the stakeholder workshop in spring 2024.

The absence of a cross-governmental group with oversight of the implementation of the circular economy has been very problematic. It is anticipated that such a group will be established following publication of the new CES. However, the delay in its establishment may allow for it to be given a more prominent role in respect of strategic leadership and oversight than was envisaged in the CES 2021–2023 (Government of Ireland, 2021), and also for it to support a high-level, coordinated approach to implementing circular economy and bioeconomy policy.

It is recommended that the main objective of this high-level circular economy and bioeconomy committee be to oversee the implementation of the forthcoming circular economy and bioeconomy strategies and any related plans, through monitoring and reviewing their implementation on an ongoing basis. In this way, the committee will promote the integration of the circular economy and the bioeconomy into a common whole-of-government approach, whereby circular economy and bioeconomy policy are mainstreamed. In doing so, the committee will also work to resolve points of conflict across government in respect of priorities. In order to monitor progress, the committee will also oversee the development of a comprehensive set of key performance indicators for the Irish circular economy and bioeconomy, in line with EU monitoring frameworks, and will oversee ongoing evaluation and updating of relevant strategies and plans. The committee will also receive reports from other groups involved in circular economy and bioeconomy governance, in particular the BIDG and the proposed National Coordinating Group for Waste and the Circular Economy.

Both the circular economy and the bioeconomy have considerable potential to support the implementation of a range of high-profile political objectives. For this reason, and because to date the circular economy and bioeconomy have both struggled for prominence across government, it is vital that the high-level group includes representatives at assistant secretary level or

above. The committee should include, at a minimum, representatives from DECC, DAFM, the Department of Enterprise, Trade and Employment (DETE), the Department of Public Expenditure, National Development Plan Delivery and Reform, the DoT, the EPA, Enterprise Ireland and local government.

It was acknowledged by research participants that the co-chairing of the BIDG by DECC and DAFM has worked well. These are the departments that have lead policy responsibility for the circular economy and bioeconomy and it is therefore appropriate that they provide the leadership required in respect of both policy areas. However, for the new high-level circular economy and bioeconomy working group, it was suggested that independent chairing, for example by the DoT, might be considered. This conclusion is based on a recognition of the careful balancing required in order to ensure solid progress in respect of both the circular economy and the bioeconomy, and the need to maintain the distinctiveness of each policy area while also maximising synergies and areas for collaboration. It is also consistent with learning about what support and contribution can be provided by what is termed the “centre of government”, that is, the departments most closely engaged in supporting the executive (OECD, 2024). However, it was also suggested that a ministerial chairperson could be very helpful in raising the profile of the circular economy and bioeconomy, and there is a precedence for this, with other high-level committees reflecting important political priorities. Ultimately, the decision on the chairperson of the committee rests with government. The group, which would meet quarterly, would report on a regular basis to the Cabinet Committee on Climate and the Environment.

In order to address operational issues and challenges in respect of the implementation of circular economy and bioeconomy measures, the BIDG and the proposed National Coordinating Group for Waste and the Circular Economy would sit “under” the high-level circular economy and bioeconomy committee. To facilitate the sharing of information and learning, and the escalation of issues where required, a representative of both groups will also be part of the high-level circular economy committee. Other well-established and specifically focused groups will continue to be required to fulfil their specific objectives. However, in time, the high-level group may make some recommendations in relation to the rationalisation of

these groups, if their remit can be satisfactorily fulfilled by another group.

The BIDG, which is well established, will continue to support the implementation of the Bioeconomy Action Plan and, in particular, promote enhanced coordination across government and investment in the bioeconomy. As noted above, the co-chairing of the BIDG by DECC and DAFM is regarded as constructive, as it promotes collaboration between the two departments and helps to reinforce the idea that the bioeconomy is not the same as the circular economy but neither is it exclusively an agricultural issue. The issue of the seniority of BIDG participants could be constructively addressed through a commitment by the two lead departments to ensure that, in the main, the meetings are chaired at assistant secretary level. Turnover of participants remains an inevitability but could be mitigated by timely appointments of replacements, which would allow for an appropriate handover.

4.2 Building Capacity

DECC has greatly enhanced its resources dedicated to the circular economy. There is also evidence of constructive stakeholder engagement. However, developing and implementing policy is slow, especially given the urgency in relation to 2030 targets for the circular economy and climate. The updated CES was required under the terms of the Circular Economy Act by the end of 2024; however, it was indicated that there was a delay due to the general election and that it would be published in early 2024. The first CES is dated 2022–2023 and did not detail specific measures to progress the development of the circular economy. The autumn 2023 progress report on the implementation of the Climate Action Plan refers to the forthcoming CES as an example of a “high impact cross-cutting action delayed in 2023” (Government of Ireland, 2023b: 10). It is likely that the degree of staff turnover in the circular economy area of DECC has delayed progress. However, consideration also needs to be given to the conjecture that has emerged during this research that the circular economy suffers in terms of priority and focus compared with climate policy.

Within DECC, resources dedicated to the bioeconomy are significantly less than those for the circular economy. Furthermore, the potential for synergies and greater collaboration between those working on the circular economy is diminished by the two policy

areas being in different divisions under different assistant secretaries general. While there appears to be good internal communication between the circular economy and bioeconomy sections of the department and the teams share a technical expert, it would seem desirable that this collaboration be further reinforced through co-location within the same division. Given the overlapping objectives and prominence of climate policy, there will of course need to be ongoing engagement with those working on climate policy. However, it is recommended that, given the clear synergies between the circular economy and bioeconomy, progress in both policy areas, without in any way diluting the distinctiveness of the bioeconomy, could be better served by one division under the same assistant secretary.

In addition, in respect of departmental capacity, some technical elements of the bioeconomy mean that it can be difficult for generalists to fully absorb all aspects of policy and communicate it to colleagues. Having a small number of experts within government who understand the bioeconomy from all perspectives has been shown to be very helpful and to have increased knowledge in relation to the bioeconomy across government. A further, relatively modest, increase in technical expertise could build on this, and is likely to be put in place as a result of measures included in the Bioeconomy Action Plan.

The EPA is specifically tasked with leading and supporting Ireland’s circular economy through the CEP. In order to support the delivery of the CEP, a circular economy unit was established within the EPA. Developments in policy inevitably have implications in terms of capacity to implement the policy. Capacity building, collaboration and knowledge generation and sharing are all highly resource dependent, and the breadth of the issues being addressed by both the EPA and local government suggests that their levels of resourcing in respect of the circular economy and bioeconomy should be kept under review. At local government level, further integration of the work of front-line staff dealing with capacity building and awareness raising on environmental issues should be considered, either at individual local authority level or on a shared-service basis. As noted, there is considerable overlap in the approaches required in respect of the circular economy, water quality, climate change and biodiversity. However, it also needs to be recognised that both the circular economy and

the bioeconomy have implications for economic and enterprise development activities within local government.

In terms of capacity within the governance structures, the BIDG has experienced challenges in terms of both the grade level of participants and their turnover. Both of these have resulted in reliance on the secretariat to progress objectives. The BIDG secretariat is widely acknowledged as very able and committed, but the level of dependence on it represents a governance risk. One of the expectations of the Bioeconomy Action Plan is that it will lead to greater ownership and responsibility for the development of the bioeconomy in Ireland among BIDG participating organisations.

In seeking to raise the prominence of the bioeconomy, it is recognised that, while balancing competing priorities will always be a reality for senior management, the potential of circular economy and bioeconomy policies to support climate policy and sustainable economic development are important considerations. However, the absence of strong and focused leadership for policy development and implementation have slowed down the delivery of objectives slower and greatly impacted the extent to which organisations without direct policy responsibility can be encouraged to engage with and give prominence to circular economy and bioeconomy measures.

The Bioeconomy Action Plan recognises these challenges and seeks to address them through a range of actions. Governance and awareness raising are prominent in the plan, with measures to promote policy coordination and coherence. However, the challenge is to ensure that these measures are meaningfully implemented. In addition, relevant organisations are required to report on progress to the BIDG. However, while good systems and processes can greatly support policy implementation and governance, ultimately, good leadership also matters. For this reason, the high-level circular economy and bioeconomy committee proposed in section 4.1 is essential to provide the strategic leadership both areas require.

The challenges for the Irish public service caused by high levels of staff turnover and a lack of meaningful strategic workforce planning are beyond the scope of this research. However, the “not healthy but debilitating” impact of high levels of turnover on

productivity and outcomes has been studied elsewhere (Sasse and Norris, 2019). Similarly, the risks for Irish public service organisations that do not engage with workforce planning have also been studied (O’Riordan, 2019), with the Australian Public Service Commission (Freynes, 2010) concluding that, in the absence of workforce planning, “we will not be able to retain the skills we need to deliver the high-quality policy, programmes and services that a government expects of a professional public service”. Freynes (2010: 275) further describes workforce planning as a “tool of good oversight” and concludes that “not having it indicates an incomplete governance toolkit”. These recommendations relate to policy implementation and governance in general but are equally relevant for the circular economy and bioeconomy specifically. Similarly, the OECD (2023) has set out a range of skills and capabilities for policy development at an organisation level, and given examples of how, in other countries, training and development programmes have been implemented to support public servants in developing these.

Lastly, the need for training and development to build capacity emerged as a conclusion. As noted, the bioeconomy has technical elements, and those newly involved in the area need to develop an understanding of its breadth. However, it is also necessary to improve knowledge of the bioeconomy across government. It was suggested, in the first instance, that this could be done through training those working in climate units, as they are also typically the bioeconomy representative. Those involved in implementing climate policy have also grappled with this issue and have sought to address it by developing an online training module under the auspices of One Learning, the civil service training unit, which is now part of the IPA. More broadly, in relation to capacity building, it was suggested that there needs to be training and development on cross-governmental collaboration, systems thinking and governance. This is a wider civil service issue, also raised by the OECD (2023).

4.3 The Approach to Regulation

A robust regulatory framework that is appropriately enforced can support governance and the achievement of desired outcomes, but the opposite is also true. A particular challenge in respect of the circular economy and bioeconomy is that they are continually evolving policy areas. The case study of

governance arrangements in relation to C&D waste and the circular economy highlighted some very helpful circular economy regulatory initiatives, for example in relation to the classification of by-products and end-of-waste materials, and further measures have been signalled by government.

While concrete progress has been made, in the course of this research there was also a lot of general comment on the importance of regulation keeping up with innovation. However, when asked for further detail, participants in circular economy and bioeconomy governance structures found it difficult to identify specific challenges. This causes a level of frustration for the EPA, which on the one hand is criticised for not responding adequately, but on the other is not being told where action is needed. The lack of clarity in relation to regulatory gaps points to the importance of detailed stakeholder engagement and research. Under the Bioeconomy Action Plan, a full regulatory analysis is proposed in respect of the bioeconomy, and there is a similar need for this for the circular economy. The importance of aligning bioeconomy regulation with circular economy regulation was also noted. These points need to be addressed by the new CES.

In addition, and in order to get beyond something of an impasse in respect of regulatory issues, it would be valuable if those involved in the governance structures for the circular economy and bioeconomy engaged in some regulatory experimentation, for example regulatory sandboxes. This is in addition to the ongoing work of the EPA, organisations such as Circuléire and stakeholder forums such as the Bioeconomy Forum and the CSG to progress regulation. A regulatory sandbox allows innovators to test new products, services and business models. The concept derives from the world of software development, where new code can be tested in a ring-fenced setting without affecting the operations and safety of the wider system. The OECD has highlighted the value of regulatory experimentation to help promote adaptive learning and innovative and better-informed regulatory policies and practices (OECD, 2024).

4.4 Stakeholder Engagement

The WAG is regarded as helpful by DECC, but some research participants think it far too large and serves

a function only in terms of information sharing rather than, as its name would suggest, advising on policy. It is recommended that the group be retained, but with further reflection in respect of its objectives, and that a clear schedule of priority topics for discussion be identified. This in turn could lead to the establishment of subgroups to focus on specific areas, along the lines of the Textiles Advisory Group.

The Bioeconomy Forum and its expert advisory group are regarded favourably. Prior to the launch of the Bioeconomy Action Plan, the membership of the forum was reviewed and expanded, and this contributed in a significant way to the development of the plan. The action plan indicates that the role of the forum is to support the work of the BIDG in implementing the plan. There is potential for the approach and work of the Bioeconomy Forum to inform thinking in relation to the WAG, for example the Bioeconomy Forum’s clarity in respect of its terms of reference, objectives and work programme; the strong, independent chairing of the forum; and the strong, mutually supportive relationship between the forum and its secretariat.

The Circular Economy Communications Group, encompassing DECC, the EPA and local government, was set up to ensure a planned, coordinated and targeted approach to communication with stakeholders and the general public. While it may continue to operate in the short term, in the long term it would seem desirable that communication on sustainability issues is done in a collaborative way, both to benefit from synergies and to promote a more coherent message. It is therefore recommended that the Circular Economy Communications Group engages with the CCCC, chaired by the DoT, to explore opportunities for collaboration and integration. For all groups, there needs to be clarity on terms of reference, with a clear delineation of roles, including leadership, strategic planning, policy advice, operational management, stakeholder engagement, monitoring and oversight. Avoiding duplication is key, and streamlining where possible is desirable given existing strains on resources.

In terms of engagement with the general public and reaching a broader audience for circular economy and bioeconomy policy, the Bioeconomy Action Plan proposes a range of measures, including a targeted communications campaign, a Bioeconomy Ireland Week and, in order to promote more coordinated communication, collaboration with the CCCC.

In respect of the circular economy, the Rediscovery Centre has been awarded funding by DECC to promote circular economy ideas. However, there are also opportunities for a more joined-up approach to communication and engagement between the circular economy and bioeconomy policy areas. Within local government, staff working on public engagement in respect of water, climate and biodiversity are already aware of the need to promote environmental and sustainability issues more broadly, and, while resource constraints are acknowledged, consideration needs to be given to more formally promoting the circular economy and bioeconomy. The forthcoming Strategic Framework for Workforce Planning in local government is aimed at putting in place a more rigorous and evidence-based approach to staffing within the sector, and may provide a route to accessing dedicated resources for local authorities in respect of the circular economy and bioeconomy.

4.5 Monitoring and the Use of Data and Evidence

Data monitoring, tracking and reporting of progress towards delivering on targets in respect of the circular economy and bioeconomy have emerged as prominent issues in the course of this research. Ireland is not yet tracking all of the indicators deemed relevant to the circular economy in the EU's Circular Economy Monitoring Framework. Similarly, with the bioeconomy, there is a need to develop and monitor performance in respect of a range of new indicators. While there was an overall sense from research participants that progress has been made in developing an evidence base in respect of the circular economy and bioeconomy, more work has to be done. Relevant data are important for ensuring commitment to both policy areas across government and facilitating the move from evidence and knowledge to action.

An early priority of the high-level circular economy and bioeconomy oversight committee proposed in section 4.1 should be to build on the work done to date on capturing data on the circular economy and bioeconomy, in particular the identification of suitable key performance indicators to track progress in both policy areas in terms of broader outcomes. Consideration and agreement in relation to how

and by whom the indicators should be measured is also needed. At present, it is envisaged that the bioeconomy observatory, proposed in the Bioeconomy Action Plan, will develop a monitoring approach for the Irish bioeconomy by leveraging the approach developed at EU level.¹⁵ Both Finland and Flanders, two of the areas for which case studies were carried out as part of this research, have done considerable work in developing indicators to review progress in respect of circularity.

A further challenge is how best to monitor and evaluate the implementation of actions and measures identified in strategies and plans to support the implementation of circular economy and bioeconomy policy and to ensure that corrective action is taken when needed or when progress is off-track. Ongoing evaluation facilitates oversight and, where warranted, a change in approach, rather than waiting until a strategy or action plan is reaching completion to identify challenges (Boyle, 2014). The high-level circular economy and bioeconomy oversight committee could have a central role to play here.

Monitoring implementation of measures and progress in respect of objectives requires a careful balance. On the one hand, monitoring needs to be robust enough to be meaningful, but, on the other hand, not so onerous that it deflects the organisations concerned away from implementation and instead towards putting all their focus on reporting. There is, however, experience across government from implementing other environmental policies, in particular under the Climate Action Plan, and learning in this regard needs to be shared.

4.6 Knowledge Generation and Sharing

Knowledge generation is one of the strengths of the circular economy. The EPA's CEP gives prominence to innovation and demonstration, and there are several non-governmental organisations (NGOs) that are also prominent in this area. However, care needs to be taken so that knowledge is shared and used to inform the development and implementation of policy. Governance structures and processes can help in this regard, as they provide regular and structured

¹⁵ https://knowledge4policy.ec.europa.eu/bioeconomy/monitoring_en (accessed 11 December 2024).

engagement among those working in the same policy area.

Similarly, for the bioeconomy, there is very good policy engagement with university and research centres, and also collaboration with industry. The national bioeconomy research centre BiOrbic also plays a prominent role. Funding provided by DECC, DAFM, the Sustainable Energy Authority of Ireland, Science Foundation Ireland and the EPA to support knowledge appears to be targeted in a constructive way. Stakeholder engagement through the Bioeconomy Forum and its expert advisory group, in conjunction with the bioeconomy secretariat, illustrates the point made above: that structures, when appropriately supported, can facilitate knowledge sharing. Knowledge and skills and research, development and innovation are two of the pillars of the Bioeconomy Action Plan, with the proposed bioeconomy observatory to play an important role in ensuring the coordination of research and knowledge generation.

However, knowledge and learning also needs to be shared with those not directly involved in the governance structures. This is particularly pertinent since growing the circular economy and bioeconomy requires the mainstreaming of both policy areas. A whole range of economic, social and other environmental policies need to reflect circular approaches. Engagement with the DoT-based CCCC may help in this regard. In the first place, it appears sensible to look to build knowledge in relation to the

circular economy and bioeconomy with those working in climate units across government. Local government also faces challenges in relation to knowledge sharing, both among staff and with citizens more broadly. There are lessons to be learned from both water and climate policy, where local government commitments are managed on a shared-service basis. For example, two local authorities, Tipperary and Kilkenny County Councils, have led engagement and communication on water quality through the establishment of LAWPRO. Similarly, Climate Action Regional Offices have been established on a shared basis.

Consideration is being given by DECC to the establishment of a centre of excellence in respect of circular innovation in order to support industry to adopt circular approaches. Organisations such as Zero Waste Scotland and the Circular Economy Policy Research Centre and Sitra in Finland play an important role in raising awareness about the circular economy and carrying out and commissioning research. At present, the EPA and, to a degree, NGOs would seem to fulfil many of these functions, although perhaps in a less prominent way than in other countries. Further engagement across the governance structures is required to determine the most suitable approach for the future, although it is important that any new entities established should add to and improve on what is being done already, rather than simply replicating it, and should have clear terms of reference and objectives.

5 Research Conclusions and Recommendations

The circular economy and bioeconomy are evolving policy areas that support a sustainable approach to economic and societal development. However, progressing both areas requires a whole-of-government approach. To date, this has been hampered by the perception that these are abstract, technical and emerging policy areas and, in the case of the bioeconomy, a rural and agricultural concern. While some elements of both the circular economy and the bioeconomy can be technical, the understanding that instead needs to be cultivated is that they represent a solution to a range of environmental and economic challenges. The recommendations in this report are aimed at supporting this objective.

The research has reviewed governance arrangements in respect of both the circular economy and the bioeconomy and makes recommendations for improvements. The findings point to the considerable importance of robust governance arrangements in addressing the complex challenge of developing the circular economy and bioeconomy in Ireland. First and foremost, there need to be structures; however, good governance is not only about structures, it also requires clarity about roles and responsibilities and an emphasis on leadership and capacity building. Stakeholder engagement and knowledge generation and sharing are essential to enrich and inform policy, while regulation, monitoring and evaluation are needed to review progress and ensure appropriate sanction and corrective action when needed.

The circular economy and bioeconomy are distinct policy areas but there are clear overlaps in terms of their objective, that is, a more sustainable, regenerative, innovative and resource-efficient world with a lower carbon footprint. It is now recognised at EU level that in order to be successful the European bioeconomy needs to have circularity at its heart. However, similarly, part of the evolution from waste management to the circular economy involves consideration of circular approaches to design and production. There is an opportunity to reflect bio-based innovations and solutions in a range of circular economy priority areas, for example packaging,

plastics, textiles, food, and construction and building, while also ensuring that waste prevention remains a priority.

It is important that the forthcoming updated CES and the whole-of-government bioeconomy strategy proposed in the Bioeconomy Action Plan promote meaningful policy coherence. In addition, greater collaboration on a range of common activities would leverage learning and synergies, while also facilitating the participation of busy public servants involved in the development of both areas. The starting point for delivering on these conclusions is addressing the overlap in terms of high-level governance structures.

A summary of the conclusions and recommendations of this research is set out below.

5.1 Roles and Responsibilities

- For both the bioeconomy and the circular economy, coherence across a range of relevant government policies needs to be improved. Both the circular economy and the bioeconomy support key government outcomes in terms of sustainable development. Congruence between circular economy and bioeconomy policy and, for example, enterprise, housing, energy and rural development policy is therefore warranted. Furthermore, the sort of meaningful policy coherence necessary to achieve transformative change requires thoughtful consideration and integration of policy actions and measures, as opposed to what has been described as “low ambition policy coherence” (Pender *et al.*, 2024).
- Policy development and policy implementation must be considered in tandem. There is an opportunity in the forthcoming updated CES and Bioeconomy Strategy to provide clear policy guidance for both policy areas in respect of actions and measures required to make progress.
- To provide greater coherence between the two policy areas and ensure greater coordination and capturing of synergies, it is recommended that (i) the proposed circular economy working

- group encompasses the bioeconomy, (ii) the terms of reference and name of this group are amended, and (iii) this group has responsibility for overseeing, at a high level, the development and implementation of circular economy and bioeconomy policy; overseeing the development of a comprehensive set of performance indicators for both policy areas; monitoring progress in policy implementation; supporting ongoing evaluation and updating of policy; and facilitating engagement to resolve points of conflict across government in respect of policy development and implementation.
- The high-level governance group needs to include senior managers at assistant secretary level or above from relevant government departments and agencies including, at a minimum, the DoT, DECC, DAFM, DETE, the EPA and local government. Representation at senior public service level is necessary to ensure that those involved can direct the concrete action required in their own organisations. The chairing of the group is a matter to be determined by government, but there is precedent for both the DoT and a government minister chairing complex, cross-government policy implementation groups that are supporting prominent political objectives.
 - The National Coordinating Group for Waste and the Circular Economy, proposed in the NWMPCE, is anticipated to be set up in early 2025. In the interim, there is an opportunity to consider its remit further. The recommendation from this research is that the proposed tripartite group should be distinct from the high-level governance group, with a far more operational focus. However, in order to ensure effective communication, it is recommended that the chairpersons of the National Coordinating Group for Waste and the Circular Economy and the Local Government National Waste Programme Coordinator also become members of the high-level governance group. It is also proposed that the National Coordinating Group for Waste and the Circular Economy links in with relevant bioeconomy stakeholders, in particular the BIDG, to ensure collaboration across government in promoting a circular approach to bio-waste and other areas of common interest.
 - The BIDG will continue to oversee implementation of the Bioeconomy Action Plan and focus on operational issues and problem solving. It is recommended that the joint chairing of the BIDG by DECC and DAFM continues, with the joint chairpersons also attending the new high-level governance group.
 - As evidenced in the circular economy and bioeconomy governance map accompanying this research, the governance structures, in particular those supporting the circular economy, are extensive. This means that the same small group of people spends a considerable amount of time engaged in collaborative, cross-government work, in addition to their roles within their own organisations. While this engagement is fundamental to governance, the recommendations set out above are aimed at making the engagement more efficient.
 - Many of the groups and committees that are part of the broad governance arrangements for the circular economy are operational in nature or deal with very specific aspects of circular economy governance. At present, it is suggested that these groups remain. However, in time, as the work of the high-level governance group is established, some rationalisation may be considered. For all groups, there needs to be clarity on terms of reference, with a clear delineation of roles, including leadership, strategic planning, policy advice, operational management, stakeholder engagement, monitoring and oversight. Avoiding duplication is key, and streamlining where possible is desirable given the strain on resources.
 - DECC has lead policy responsibility for the circular economy and also actively supports bioeconomy policy implementation through co-chairing the BIDG with DAFM. While there is good internal communication between the circular economy and bioeconomy sections, it is recommended that this be improved through co-locating the units within the same division and under the same assistant secretary. Rather than diluting the prominence of the bioeconomy, as has been suggested, it is considered that this restructuring would facilitate synergies and enable the bioeconomy unit to benefit from the higher level of resources currently allocated to the circular economy.

5.2 Capacity

- There are very able and committed people working across government in developing, implementing and supporting circular economy and bioeconomy policy. However, the wide-ranging nature of the circular economy and bioeconomy, and consequently of the relevant governance structures, means that these people are extremely busy. A modest increase in the number of circular economy and bioeconomy policy analysts in key departments and implementing bodies would appear to be warranted.
- There is an urgent need for knowledge about the circular economy and bioeconomy to be shared more widely across government to ensure more effective policy implementation and coherence. The modest increase in resources suggested above will support this. It is also suggested that training could, in the first instance, be given to staff in climate units who are already prominently engaged in promoting sustainable economic development across government. An online training course on both the circular economy and the bioeconomy, similar to the one now in place for climate policy,¹⁶ could be developed under the auspices of One Learning, the civil service digital learning and development service.
- The strong engagement between central and local government on the circular economy, which has evolved from their relationship in respect of waste management, could be leveraged to also support the bioeconomy. The need to better integrate the bioeconomy with local government is an action point within the Bioeconomy Action Plan (Government of Ireland, 2023a). For this to happen effectively, there is a need for collaboration across a wide range of local government functions, including the environment, planning, economy, enterprise and community development.
- Consistent with the findings of the OECD (2023), this research found evidence of the need to build capacity in respect of collaborative working, systems thinking and governance. This is a wider public service development issue. The OECD (2023) made recommendations in respect of how this issue could be addressed.

5.3 Regulation

- There are challenges in ensuring that regulation in the areas of the circular economy and bioeconomy keeps up with innovation. The issue of regulatory gaps is given prominence in the Bioeconomy Action Plan (Government of Ireland, 2023a), and research has commenced to progress this measure. Similar research is required in respect of the circular economy. However, more broadly, there is a challenge related to the breadth of the circular economy and bioeconomy and the consequent need for innovative companies to engage with multiple regulations, overseen by a range of regulatory bodies.
- Regulatory experimentation could play a role in helping to identify regulatory challenges, innovation and better-informed regulatory policies and practices. Suitable tools and techniques have been highlighted by the OECD (2024).

5.4 Stakeholder Engagement

- Stakeholder engagement, across government and also with the research community, industry and the general public, is one of the strengths of circular economy and bioeconomy governance. The contribution of stakeholders is widely seen as beneficial. The Bioeconomy Forum, which is well established, made a significant contribution to the development of the Bioeconomy Action Plan, and is mandated to liaise with bioeconomy stakeholders and support the BIDG in implementing the plan. The WAG supports stakeholder engagement in respect of the circular economy. At present, there is a lack of clarity about the objectives and work programme of the group. There are lessons for the WAG in the approach and work of the Bioeconomy Forum.
- There is some public engagement in respect of the circular economy and bioeconomy, but this needs to be further developed, as delivering on targets in respect of the circular economy has strong behavioural aspects. Organisations such as Sitra in Finland and Zero Waste Scotland in Scotland have a public profile, which is helpful in terms of public engagement. The Rediscovery Centre,

16 <https://onelearning.gov.ie/ilp/pages/coursedescription.jsf?courseId=8356923&catalogId=1700> (accessed 20 February 2025).

an NGO that supports Ireland’s transition to a sustainable circular economy, has been awarded funding by DECC to develop this area.

- The approach of local government to implementing waste and circular economy policy is going through a period of radical reorientation under the NWMPCE. There is an opportunity to put in place a more joined-up approach to stakeholder engagement across a wide range of environment and sustainability policy areas. This potential is recognised in local government, and it is anticipated that such an approach will follow from the local government strategic workforce planning review published in autumn 2024. In terms of stakeholder engagement, there is also potential for local government, in delivering services related to the environment, planning, economic and enterprise support, and cities and communities, to reflect and support the development of the bioeconomy.

5.5 Monitoring and the Use of Data and Evidence

- The use of data and evidence to monitor the progress of circular economy and bioeconomy policy is recognised as very important, and several research projects that review progress in respect of both policy areas have either been carried out or are ongoing. Statutory reporting on aspects of the circular economy is also ongoing. However, there remains a need, in line with practices in a number of the case study regions, to identify key performance indicators that show the contribution of the circular economy and bioeconomy to

key government environmental objectives and, more broadly, to Ireland’s economy and society. This could be an early task of the high-level governance group proposed above.

- Oversight of the implementation of the Bioeconomy Action Plan and the forthcoming CES and Bioeconomy Strategy is necessary to ensure solid progress. The proposed high-level governance group has an important role in this regard. Care needs to be taken to ensure a good balance between accountability and ensuring progress on actions and measures, while also working with organisations to support them in respect of implementation.

5.6 Knowledge Sharing

- Knowledge generation is a strength of both the circular economy and the bioeconomy, and there is a wide range of research under way, funded by a range of government organisations. Coordinating this research and ensuring that the learning from demonstration and pilot projects, where warranted, becomes scaled up is important. There is a proposal in the Bioeconomy Action Plan to establish a bioeconomy observatory as a focal point for research, and there is also research being carried out to explore the setting up of a circular economy centre of excellence for innovation. However, it is important that any new organisation established adds to, and improves on, what is being done already, rather than simply replicating it, and it should have a clear terms of reference detailing its objectives.

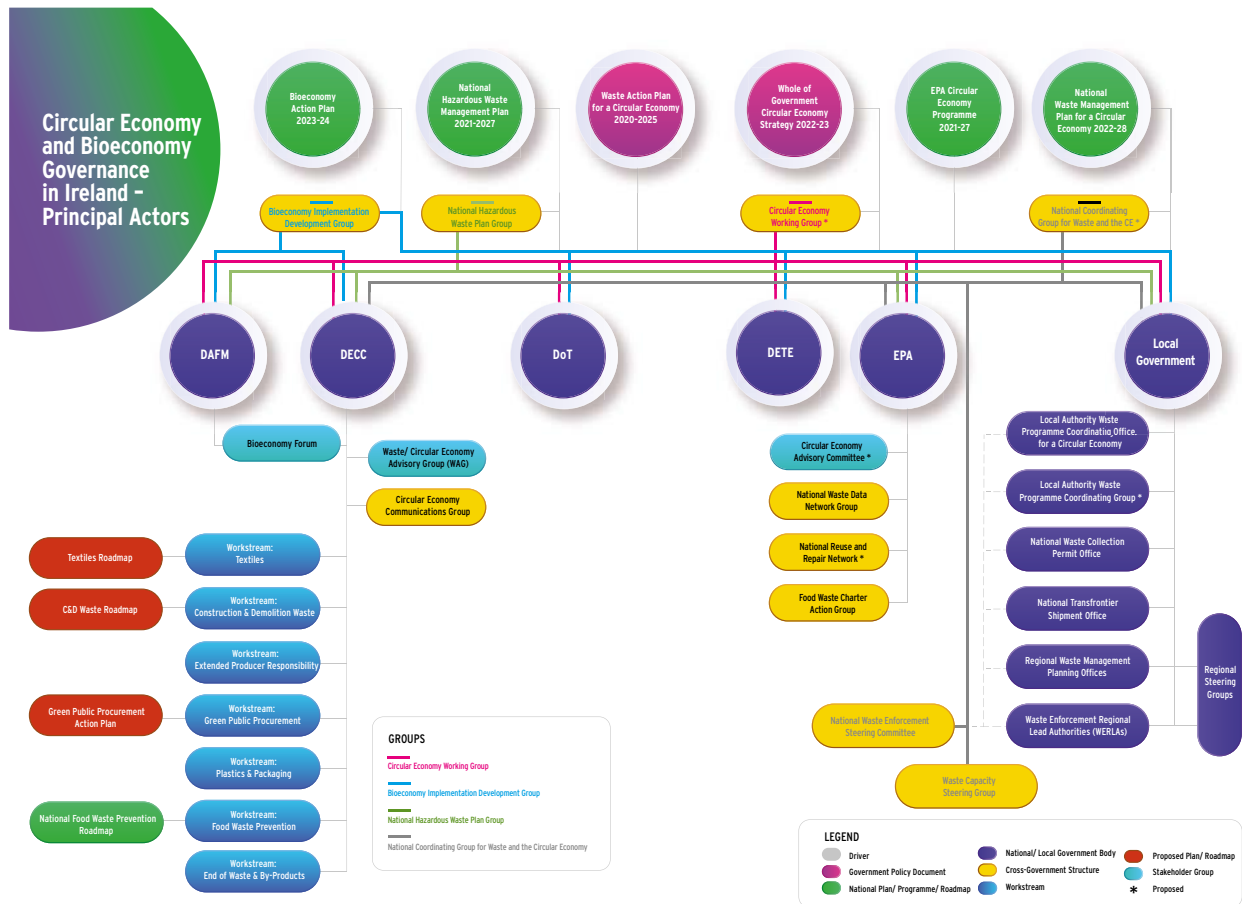
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Appendix 1 Circular Economy and Bioeconomy Governance Map

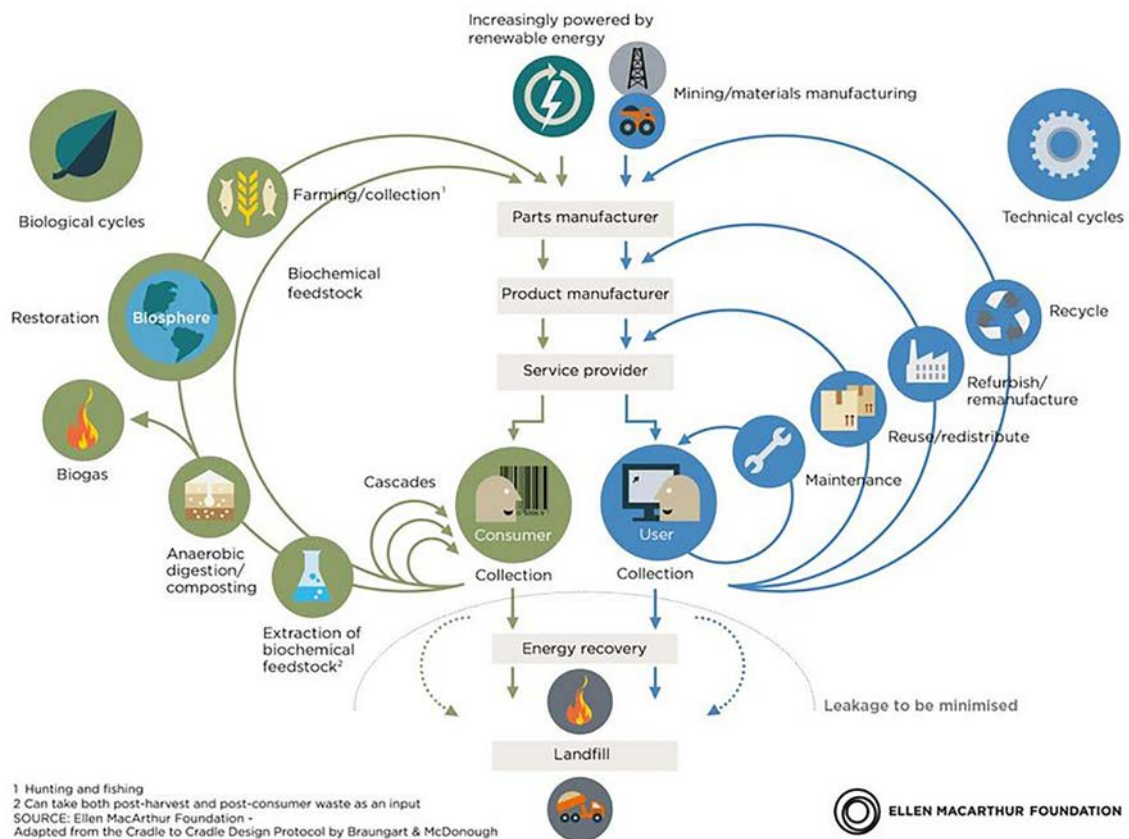


Appendix 2 Organisations that Participated in the Research

Department of Agriculture, Food and the Marine
Department of Rural and Community Development
Department of Enterprise, Trade and Employment
Department of the Environment, Climate and Communications
Department of the Taoiseach
Department of Public Expenditure, National Development Plan Delivery and Reform
Environmental Protection Agency
Irish Green Building Council
Local Government Management Agency
Connaught-Ulster Regional Waste Office
Eastern-Midlands Regional Waste Office
Southern Region Waste Management Office
Irish Local Development Network
Ministry of Environment, Denmark
Ministry of Climate, Estonia
Ministry of Regional Affairs and Agriculture, Estonia
Ministry for the Environment, Scotland
Ministry of Economic Affairs and Employment, Finland
National Economic and Social Council
Regional Waste Management Planning Offices
RKD Architects
Circular Bioeconomy Cluster South West
Teagasc
University College Dublin
Zero Waste Scotland

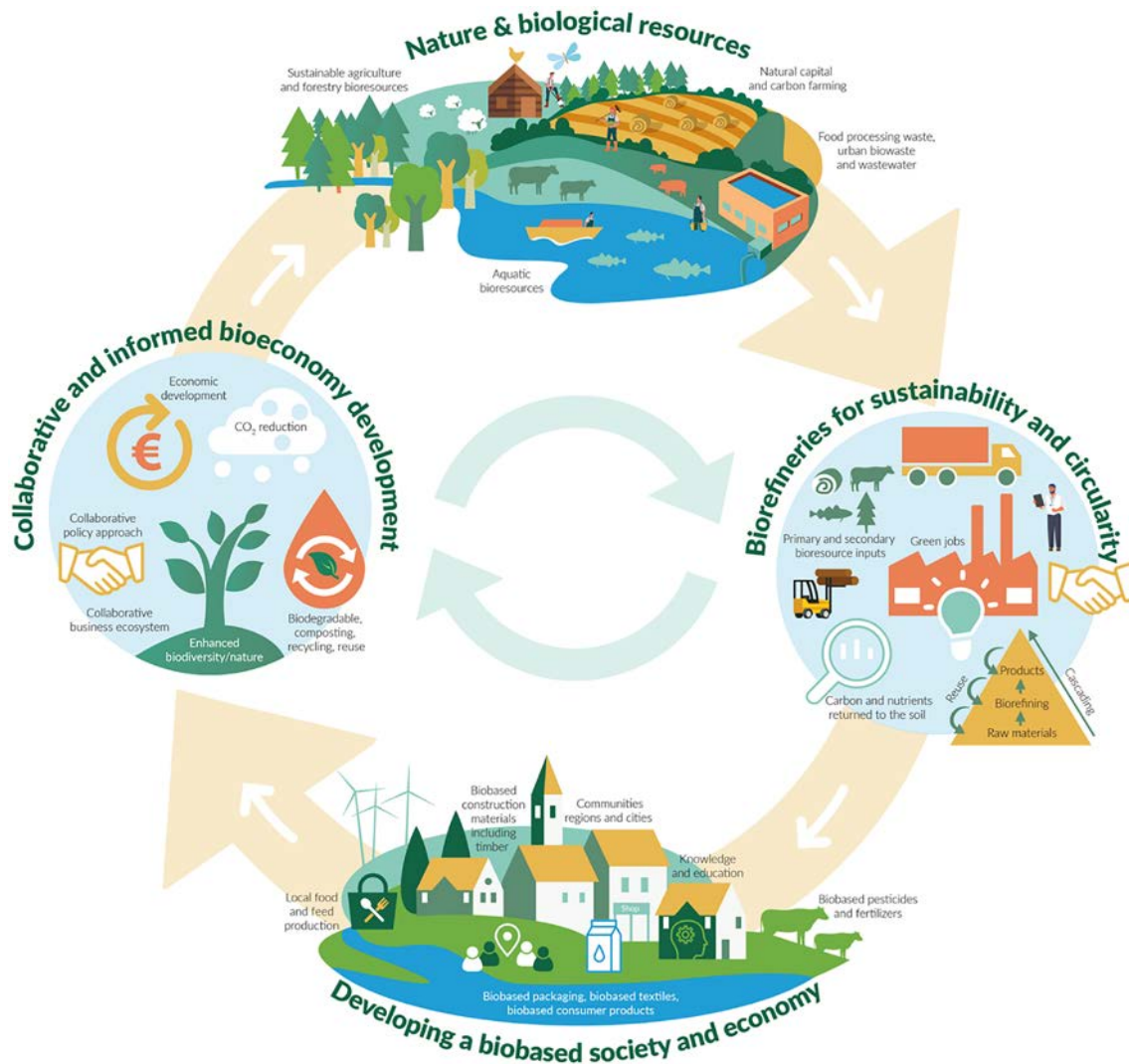
Appendix 3 The Butterfly Model for the Circular Economy

CIRCULAR ECONOMY - *an industrial system that is restorative by design*



Source: Ellen MacArthur Foundation. Copyright © Ellen MacArthur Foundation (Circular economy system diagram, 2019).

Appendix 4 Developing a Bio-based Society and Economy (Bioeconomy Action Plan 2023–2025, Ireland)



Abbreviations

BIDG	Bioeconomy Implementation and Development Group
C&D	Construction and demolition
CCCC	Climate Communications Coordination Committee
CCMA	County and City Management Association
CEP	Circular Economy Programme
CES	Circular Economy Strategy
CMU	Circular material use
CSG	Construction Sector Group
DAFM	Department of Agriculture, Food and the Marine
DECC	Department of the Environment, Climate and Communications
DETE	Department of Enterprise, Trade and Employment
DoT	Department of the Taoiseach
EPA	Environmental Protection Agency
IPA	Institute of Public Administration
LAWPRO	Local Authority Water Programme
NGO	Non-governmental organisation
NHWMP	National Hazardous Waste Management Plan
NWMPCE	National Waste Management Plan for a Circular Economy
OECD	Organisation for Economic Co-operation and Development
RWMPO	Regional Waste Management Planning Office
UN	United Nations
WAG	Waste Advisory Group
WAPCE	Waste Action Plan for a Circular Economy
WERLA	Waste Enforcement Regional Lead Authority

An Ghníomhaireacht Um Chaomhnú Comhshaoil

Tá an GCC freagrach as an gcomhshaol a chosaint agus a fheabhsú, mar shócmhainn luachmhar do mhuintir na hÉireann. Táimid tiomanta do dhaoine agus don chomhshaol a chosaint ar thionchar díobhálach na radaíochta agus an truaillithe.

Is féidir obair na Gníomhaireachta a roinnt ina trí phríomhréimse:

Rialáil: Rialáil agus córais chomhlíonta comhshaoil éifeachtacha a chur i bhfeidhm, chun dea-thorthaí comhshaoil a bhaint amach agus díriú orthu siúd nach mbíonn ag cloí leo.

Eolas: Sonraí, eolas agus measúnú ardchaighdeán, spriocdhírthe agus tráthúil a chur ar fáil i leith an chomhshaoil chun bonn eolais a chur faoin gcinnteoireacht.

Abhcóideacht: Ag obair le daoine eile ar son timpeallachta glaine, táirgiúla agus dea-chosanta agus ar son cleachtas inbhuanaithe i dtaobh an chomhshaoil.

I measc ár gcuid freagrachtaí tá:

Ceadúnú

- > Gníomhaíochtaí tionscail, dramhaíola agus stórála peitрил ar scála mór;
- > Sceitheadh fuíolluisce uirbigh;
- > Úsáid shrianta agus scaoileadh rialaithe Orgánach Géinmhodhnaithe;
- > Foinsí radaíochta ianúcháin;
- > Astaíochtaí gás ceaptha teasa ó thionscal agus ón eitlíocht trí Scéim an AE um Thrádáil Astaíochtaí.

Forfheidhmiú Náisiúnta i leith Cúrsaí Comhshaoil

- > Iniúchadh agus cigireacht ar shaoráidí a bhfuil ceadúnas acu ón GCC;
- > Cur i bhfeidhm an dea-chleachtais a stiúradh i ngníomhaíochtaí agus i saoráidí rialáilte;
- > Maoirseacht a dhéanamh ar fhreagrachtaí an údaráis áitiúil as cosaint an chomhshaoil;
- > Caighdeán an uisce óil phoiblí a rialáil agus údaruithe um sceitheadh fuíolluisce uirbigh a fhorfheidhmiú
- > Caighdeán an uisce óil phoiblí agus phríobháidigh a mheasúnú agus tuairisciú air;
- > Comhordú a dhéanamh ar líonra d'eagraíochtaí seirbhíse poiblí chun tacú le gníomhú i gcoinne coireachta comhshaoil;
- > An dlí a chur orthu siúd a bhriseann dlí an chomhshaoil agus a dhéanann dochar don chomhshaol.

Bainistíocht Dramhaíola agus Ceimiceáin sa Chomhshaol

- > Rialacháin dramhaíola a chur i bhfeidhm agus a fhorfheidhmiú lena n-áirítear saincheisteanna forfheidhmithe náisiúnta;
- > Staitisticí dramhaíola náisiúnta a ullmhú agus a fhoilsiú chomh maith leis an bPlean Náisiúnta um Bainistíocht Dramhaíola Guaisí;
- > An Clár Náisiúnta um Chosc Dramhaíola a fhorbairt agus a chur i bhfeidhm;
- > Reachtaíocht ar rialú ceimiceán sa timpeallacht a chur i bhfeidhm agus tuairisciú ar an reachtaíocht sin.

Bainistíocht Uisce

- > Plé le struchtúir náisiúnta agus réigiúnacha rialachais agus oibriúcháin chun an Chreat-treoir Uisce a chur i bhfeidhm;
- > Monatóireacht, measúnú agus tuairisciú a dhéanamh ar chaighdeán aibhneacha, lochanna, uiscí idirchreasa agus cósta, uiscí snámha agus screamhuisce chomh maith le tomhas ar leibhéil uisce agus sreabhadh abhann.

Eolaíocht Aeráide & Athrú Aeráide

- > Fardail agus réamh-mheastacháin a fhoilsiú um astaíochtaí gás ceaptha teasa na hÉireann;
- > Rúnaíocht a chur ar fáil don Chomhairle Chomhairleach ar Athrú Aeráide agus tacaíocht a thabhairt don Idirphlé Náisiúnta ar Gníomhú ar son na hAeráide;

- > Tacú le gníomhaíochtaí forbartha Náisiúnta, AE agus NA um Eolaíocht agus Beartas Aeráide.

Monatóireacht & Measúnú ar an gComhshaol

- > Córais náisiúnta um monatóireacht an chomhshaoil a cheapadh agus a chur i bhfeidhm: teicneolaíocht, bainistíocht sonraí, anailís agus réamhaisnéisiú;
- > Tuairiscí ar Staid Thimpeallacht na hÉireann agus ar Tháscairí a chur ar fáil;
- > Monatóireacht a dhéanamh ar chaighdeán an aeir agus Treoir an AE i leith Aeir Ghlain don Eoraip a chur i bhfeidhm chomh maith leis an gCoinbhinsiún ar Aerthruailliú Fadraoin Trasteorann, agus an Treoir i leith na Teorann Náisiúnta Astaíochtaí;
- > Maoirseacht a dhéanamh ar chur i bhfeidhm na Treorach i leith Torainn Timpeallachta;
- > Measúnú a dhéanamh ar thionchar pleananna agus clár beartaithe ar chomhshaol na hÉireann.

Taighde agus Forbairt Comhshaoil

- > Comhordú a dhéanamh ar ghníomhaíochtaí taighde comhshaoil agus iad a mhaoiniú chun brú a aithint, bonn eolais a chur faoin mbeartas agus réitigh a chur ar fáil;
- > Comhoibriú le gníomhaíocht náisiúnta agus AE um thaighde comhshaoil.

Cosaint Raideolaíoch

- > Monatóireacht a dhéanamh ar leibhéil radaíochta agus nochtadh an phobail do radaíocht ianúcháin agus do réimsí leictreamaighnéadacha a mheas;
- > Cabhrú le pleananna náisiúnta a fhorbairt le haghaidh éigeandálaí ag eascairt as tasmí núicléacha;
- > Monatóireacht a dhéanamh ar fhorbairtí thar lear a bhaineann le saoráidí núicléacha agus leis an tsábháilteacht raideolaíochta;
- > Sainseirbhísí um chosaint ar an radaíocht a sholáthar, nó maoirsiú a dhéanamh ar sholáthar na seirbhísí sin.

Treoir, Ardú Feasachta agus Faisnéis Inrochtana

- > Tuairisciú, comhairle agus treoir neamhspleách, fianaise-bhunaithe a chur ar fáil don Rialtas, don tionscal agus don phobal ar ábhair maidir le cosaint comhshaoil agus raideolaíoch;
- > An nasc idir sláinte agus folláine, an geilleagar agus timpeallacht ghlan a chur chun cinn;
- > Feasacht comhshaoil a chur chun cinn lena n-áirítear tacú le hiompraíocht um éifeachtúlacht acmhainní agus aistriú aeráide;
- > Tástáil radóin a chur chun cinn i dtithe agus in ionaid oibre agus feabhsúchán a mholadh áit is gá.

Comhpháirtíocht agus Líonrú

- > Oibriú le gníomhaireachtaí idirnáisiúnta agus náisiúnta, údaráis réigiúnacha agus áitiúla, eagraíochtaí neamhrialtais, comhlachtaí ionadaíocha agus ranna rialtais chun cosaint comhshaoil agus raideolaíoch a chur ar fáil, chomh maith le taighde, comhordú agus cinnteoireacht bunaithe ar an eolaíocht.

Bainistíocht agus struchtúr na Gníomhaireachta um Chaomhnú Comhshaoil

Tá an GCC á bainistiú ag Bord lánaimseartha, ar a bhfuil Ard-Stiúrthóir agus cúigear Stiúrthóir. Déantar an obair ar fud cúig cinn d'Oifigí:

1. An Oifig um Inbhuanaitheacht i leith Cúrsaí Comhshaoil
2. An Oifig Forfheidhmithe i leith Cúrsaí Comhshaoil
3. An Oifig um Fhianaise agus Measúnú
4. An Oifig um Chosaint ar Radaíocht agus Monatóireacht Comhshaoil
5. An Oifig Cumarsáide agus Seirbhísí Corparáideacha

Tugann coistí comhairleacha cabhair don Ghníomhaireacht agus tagann siad le chéile go rialta le plé a dhéanamh ar ábhair imní agus le comhairle a chur ar an mBord.

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