CIWM | Republic of Ireland Centre

Together, we stand for a world beyond waste

CIWM is the leading professional body for the resource and waste management sector with a purpose to move the world beyond waste. Representing over 5,600 individuals in the UK, Ireland and overseas, CIWM has a mission to unite, equip and mobilise its professional community to lead, influence and deliver the science, strategies, businesses and policies for the sustainable management of resources and waste.

CIWM is recognised as the foremost professional body representing the complete spectrum of the waste and resources sector. This gives the Institution the widest possible view and, perhaps more pertinently, an objective rather than partial view, given that our goal is for improvement in the management of all wastes and resources.

CIWM Ireland is one of ten CIWM Centres. CIWM Ireland represents up to 115 members. The Centre Council comprises of 9 elected Councillors (Chartered Resource and Waste Managers) and a further 6 co-opted Councillors who are representative of most sectors of the waste management industry in Ireland such as academia, consultancy, EPA, local authority, construction, waste collectors, producer responsibility and social enterprise.

Bioeconomy Action Plan - Consultation and Discussion Document

History of the Bioeconomy in Ireland

The first EU policy document on Bioeconomy (the European Bioeconomy Strategy) was published in 2012 with five major objectives and three action plans. In this report, the bioeconomy was described as "the production of renewable biological resources and their conversion into food, feed, bio-based products and bioenergy."

In 2018, a revision of the 2012 European Bioeconomy Strategy took place. In 2019, the Revised EU Circular Economy Package, the Roadmap for the Chemical Industry in Europe for Transition towards the Bioeconomy and the Circular Bioeconomy 2050 Vision were published.

All of these previous activities culminated in the development of the EU Green Deal, the Farm to Fork Strategy and the Ten Point action Plan to Create a Circular Bioeconomy devoted to a Sustainable Well-Being in the year 2020.

The two landmark policy activities at Irish level are the 2018 National Policy Statement on Bioeconomy and the 2019 Bioeconomy Implementation Group Progress Report and more

recently the Waste Action Plan for a Circular Economy (2020) and the OECD publication the Circular Economy in Ireland.

The European Commission (2018) emphasized that "European Bioeconomy needs to have sustainability and circularity at its heart" . Subsequently, practically all European bioeconomy related strategies have been linked to the Circular Economy. Merging these two concepts has led to the term 'circular bioeconomy' (CBE), which appeared around 2015 and is increasingly being used in scientific publications since 2016.

The latest estimates show that emissions in the agriculture sector have increased by 12.1 per cent from 1990 to 2020 mainly due to a 17.4 per cent increase in CH4 emissions from enteric fermentation and a 23.8 per cent increase in emissions from manure. Agriculture is responsible for 10.3% of the EU's GHG emissions and 37.5% of Ireland's GHG emissions, with nearly 70% of those coming from the animal sector (European Environmental Agency, 2022).

Ireland is still the fourth worst performing EU country on GHG emissions, but has numerous natural and locational comparative advantages for bioeconomy development namely a well-established agri-food sector that uses two-thirds of its land and employs over 170,000 people (7.75% of its working population), healthy and productive soils together with suitable climate for grass forage, hence its thriving beef and dairy production sectors, mostly commercial forest sector based on fibrous exotic conifers for pulp and board (approximately 11 % of Ireland's land), a significant seabed territory, which is about ten times its landmass and is an enormous reservoir of genetic material with vast natural product potential, as well as a booming and rapidly growing biopharmaceutical sector, with 24 out of the 25 largest pharmaceutical companies in the world having a presence in Ireland (worth €39bn in exports).

Aside from the policy documents, the Irish Government also introduced several supports to aid the development of the bioeconomy and the circular economy. Particularly important is the provision of around €17.8mn through Science Foundation Ireland for the BiOrbic Research Centre which will explore how to convert biomass resources and the residues produced during food production into higher value products. Science Foundation Ireland also supported the MaREI (Marine and Renewable Energy Research Development and Innovation Centre) for similar functions. The innovation projects (TRL>5) that evolve from BiOrbic and MaREI will be further scaled up and disseminated via Irish Bioeconomy Foundation (IBF), which is supported and funded by Enterprise Ireland. Most recently, DAFM supported the development of next generation wood-based products through a collaborative project between the SFI funded centres, AMBER and BiOrbic.

The bioeconomy covers all sectors[1] (including agriculture, horticulture, forestry, fisheries & aquaculture) and systems (including nature, land, food, energy, built environment, health) that rely on biological resources (from animals, plants, insects, micro-organisms and derived biomass, organic waste), their functions and principles. The bioeconomy encompasses these sectors, systems, associated services and investments to conserve, produce, regenerate, use, process, distribute or consume biological resources including ecosystem services. Bioeconomy allows economic and social value to be added to biological resources providing sustainable solutions (including information, products, processes, and services) in and across all economic sectors in a sustainable, renewable, and circular manner.

The bioeconomy considers our use of biological resources in a holistic way, supporting food and nutrition security, mitigating, and adapting to climate change, reducing dependence on non-renewable unsustainable resources, managing natural resources sustainably and strengthening competitiveness, creating jobs, and supporting a just transition. As such it is a natural enabler of the transformation to reach net-zero emissions by no later than 2050, as committed to in the Programme for Government and the Climate Act 2021. It is also an enabler for the Circular Economy Act 2022 that sets out the shift to a more sustainable pattern of production and consumption, including to reduce raw material consumption, to retain the value of resources in the economy for as long as possible and to significantly reduce greenhouse gas emissions. It is also a goal in Food Vision 2030, which seeks to 'embed the agri-food sector in a circular, regenerative bioeconomy'.

While 75% of the territory is farmland, 40% of the population live in the capital city, Dublin. Farmers' markets, co-operative stores in cities and towns, food distribution networks in neighbourhoods and community-supported agriculture are well-established in Ireland and contribute to self-sufficient food loops.

However, while the value of re-resourcing and recycling is positive in the framework of bioeconomy, research is called for to provide scientific bases, models and decision support tools for implementing sustainable growth and local development, which are less anthropocentric and more focused on coupling human and natural systems, to ensure we protect the natural systems we have left.

Increased circularity within the agricultural sector can support lower farm costs and reduced climate and environmental footprints, through reduced use of external inputs, closing nutrient loops and minimising harmful environmental discharges. Agricultural

[1] Cre – Blueprint for Biowaste in Ireland by 2030

wastes can also represent a valuable feedstock for the bioeconomy as described previously. Further development of this Strategy should build on existing sectoral initiatives, and ensure consistency between national policy in relation to the circular economy, the bioeconomy and climate action.

Extensive and ongoing stakeholder engagement is particularly important in relation to the circular bioeconomy as, while the circular transition can and should deliver a more resource efficient system, poorly designed or implemented policies could result in negative environmental, economic and social impacts.

Question 1: *Are you satisfied the outlined Pillars represent the structure of the Irish bioeconomy?*

The proposed pillars of the Action Plan are:
1. Governance Pillar
2. Research, Development & Innovation Pillar
3. Nature, Climate & Circular Pillar
4. Agriculture, Forestry & the Marine Pillar
5. Communities Pillar
6. Industry & Enterprise Pillar
7. Knowledge & Skills Pillar

CIWM Ireland are satisfied the outlined pillars represent the structure of the Irish bioeconomy but suggest The Governance Pillar should perhaps include risk assessment: Governance & Risk Assessment. See more detailed response in question 3.

CIWM Ireland believes The Communities Pillar must include community well-being and just transition.

Question 2: *Are there specific key performance indicators and/or targets the bioeconomy should be setting out to achieve to measure its implementation?*

CIWM Ireland suggest the KPIs outlined in the consultation should include:

- Circularity measurement(s) (Gap Report) – to indicate how truly circular the Irish bioeconomy is.
- Climate & Ecological Indicators – these must show emissions reduction; water, soil and air quality improvements must be reported in relation to all bioeconomy projects and if a negative is associated these projects should cease.
- Social Indicators – progression to a bioeconomy must show positive social benefit(s). One crude measure, for example, is the level of sustainable long-term job creation

associated with the bioeconomy; the decentralisation level of the bioeconomy versus BAU.

Question 3: *What other key issues should the Governance Pillar deal with?*

As noted in question 1, CIWM Ireland believe the Governance Pillar must take responsibility for the policy, regulation and ensure enforcement of all activities included within the bioeconomy.

The Governance Pillar's remit should oversee a health check and cross compliance with all other regulation, relating to Climate and Biodiversity as outlined in question 2.

The Governance Pillar should also support the bioeconomy in relation to information flows; the issue of GDPR cannot prevent transparency, in relation to feedstock information, product end use and waste products from biobased industries entering the environment. The potential for bio-hazards with innovative materials and their end-use, must be assessed in line with the pre-cautionary principle in relation to release to the environment.

Question 4: *What key issues should the Research, Development & Innovation Pillar deal with?*

CIWM Ireland suggests there are a several key areas that the Research, Development & Innovation pillar should address:

- Support research standards for by-product re-use and well as end-of-waste criteria
- Support ongoing research on soil & water health and air quality related to the use of bioeconomy related products and their end of life in nature
- Provide a materials flow research to support the most resource efficient and innovative use of bio products, without compromising planetary health
- Analyse the feedstock potential of the biobased industry on an annual basis, providing a database of raw materials generated
- Provide research and information on new and innovative products and their potential impact on the receiving environment.
- Provide evaluation studies on the potential and efficacy of the bioeconomy in Ireland, in relation to climate targets and the state of the environment.
- Database of materials suitable for the Bioeconomy, quantification, potential and potential hazards related – product risk assessment is key.

Question 5: *How could the RD&I bioeconomy approach be best structured to support the enhancement, application and scaling-up of biological knowledge and bioeconomy solutions?*

CIWM Ireland believe there are several potential approaches:

- Provision of a bioeconomy linked course in all universities with an already related course for example: Agriculture/ Biotechnology/Chemical engineering
- Support for studies (grant aid) on materials being produced as innovative products under the bioeconomy, specifically those receiving Government supports (like, capital grant aid, R&D)
- Support research on new and innovative products using biobased material.
- A strategic role for universities to provide pilot bio-refinery capability, to assess the potential for biobased material streams.

Question 6: *What key issues should the Nature, Climate & Circular Pillar deal with?*

CIWM Ireland would like to see standards for bio-based products produced; thresholds for emissions released to the environment, which are related to bioproduct development and production alongside waste standards for the residual wastes produced as a result of the manufacture of Biobased products.

CIWM Ireland believe the Nature, Climate & Circular Pillar has oversight on standards and particularly end-of-waste criteria for by-products.

This pillar should also have oversight, links to enforcement and reporting in relation to emissions to air, soil and water from the bioeconomy, linked to food waste, AD digestate, in-vessel composting and compost and all waste material from the BioEconomy going to land.

CIWM Ireland suggests there is a link and free flow of information to the Governance & RD&I Pillars to ensure information is available on innovative products in development and before release along with oversight in relation to cross compliance with other legislation relating to climate change and environment, under the precautionary principal.

Question 7: *What key issues concerning consumption patterns need to be examined to close the gap between sustainable supply of biological resources and demand?*

CIWM Ireland believe there are several issues that need addressing:

- Over production

- Inefficient, wasteful processing and supply chains
- Retail waste and below cost selling and dumping.
- Consumer waste and food waste management chains – primary use of food waste should be at the highest achievable point on the foodwaste hierarchy, ideally producing nutrient for soil. The processing chain must be supported to ensure quality material goes to land, with a zero tolerance for visible and invisible polymer chains.

Question 8: *What key issues should the Agriculture, Food & the Marine Pillar deal with?*

CIWM Ireland believes this Pillar needs to manage the material resources inventory – forest, sea and land.

CIWM Ireland suggests there need to be KPIs in relation to management of our land, sea and air quality, relating specifically to materials developed under the bioeconomy. Targets for this pillar should complement and relate to Nature, Climate and Circular Pillar in relation to emissions from the bioeconomy, covering greenhouse gases; soil, water and air quality, in order to maximise carbon sequestration, reduce flood risk, improve soil structure and nutrient value.

CIWM suggests that this Pillar plays a key role in governance and enforcement oversight for all other Pillars.

Question 9: *What key issues should the Communities Pillar deal with?*

CIWM Ireland suggests:

- Oversight of the effect of the bioeconomy on environmental, social, and cultural issues at local level
- Involvement in the planning process and input into bioeconomy infrastructure and by-product use
- Citizen science to support a healthy sustainable bioeconomy and provide community input on end uses for Bioeconomy products and by-products produced and their use at a local level.

Question 10: *Are local and regional policies ensuring the consideration of bioeconomy opportunities are in scope, and are coordinated approaches on such services in place at regional assembly and local authority level?*

CIWM Ireland suggests that local and regional bioeconomy Plans should be target led by the Governance Pillar.

Any local and regional policies should align with national policy and be in line with all related targets regarding emissions, soil, air and water quality.

Question 11: *What key issues should the Industry & Enterprise Pillar deal with?*

CIWM Ireland believes this pillar supports the implementation of the bioeconomy – structurally and there is increased stimulation of the bioeconomy through enterprise innovation grants.

This pillar should also bring ideas to the Irish bioeconomy.

Question 12: *What lead market initiatives could support entrepreneurship, development, innovation and the commercialisation of bio-based products, processes, information, and services?*

CIWM Ireland suggests:

- Financial support structure
- Liaison with academia and RD&I
- Pilot project support and product testing.
- Outreach to Irish based SMEs already in aligned industries

Question 13: *Due to the requirement for capital and operational investment what innovations aimed at financing infrastructures and technical and economic evaluation of innovation are necessary to scale up the bioeconomy?*

CIWM suggests there is a large fund already in place through BBI and other fund streams, but there appears to be a lack of support and opportunity. There is perhaps insufficient linking of by-products producers with the structured programmes to support them in testing, piloting, and end product delivery.

Question 14: What key issues should the Knowledge & Skills Pillar deal with?

CIWM Ireland suggests:

- Reinforcing the general public's knowledge about the bioeconomy
- Upskilling human resources as well as providing training and support for the bioeconomy industry.
- Provide education and training to the general public on the Bioeconomy perhaps through Skillnet.

Question 15: *Can the regional skills and regional enterprise approaches better support bioeconomy development?*

CIWM Ireland suggests there should be courses for companies at a local level on such areas as innovation and the bioeconomy.

LEOS could provide local support to SMEs interested in developing bioeconomy projects and help facilitate information flow on where and how to access support.

Question 16: *An important part of developing the bioeconomy is to determine the most appropriate practices, treatments, technologies, logistics and business models to valorise ecosystem services, primary and secondary biomass resources. What role do advisory systems play in addressing this challenge?*

CIWM Ireland believes the Nature, Climate and Circular Pillar along with Natural Capital Ireland in line with IPBES guideline on valorising systems and services, can provide models to valorise ecosystem services. These models should apply to biobased materials. The Nature, Climate and Circular Pillar and natural Ireland should both play a part in advising business on materials use for all primary and secondary biomass resources.

Question 17: *Are there any further Pillars/Issues which this Action Plan should address?*

CIWM Ireland suggests:

1. Prioritisation of the resource database.
2. Provision of support to companies looking to invest,
3. Ensuring the structures are in place to enforce the precautionary principal and that due diligence and over-sight is provided to confirm that products are critically and independently assessed so they do not have a net negative impact on Ireland's environment and provide a socially net positive effect.

Question 18: *Indicate what the top five priorities for action in the bioeconomy over the next three years should be?*

- A database of materials facilitating materials suitable for the Bioeconomy.
- Investment in education, innovation and support for businesses interested in starting Bioeconomy projects.
- Oversight and evaluation to ensure a net positive effect of the Bioeconomy
- Support for regulators and compliance officials to audit and investigate products produced for the Bioeconomy, along with any residues or waste products, to

facilitate compliance with standards. Set up a Bioeconomy Unit in the EPA for products IPPC licensed as well as provide finance for monitoring and review.

- Educate the public on the Bioeconomy – what it is, what it means for employment and well-being as well as on the potential for unintended consequences with biotechnology.