



Observations and Feedback to the European Commission on the Proposed Revision of the EU Waste Framework

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Zero Waste Alliance Ireland is a member of



and



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ZERO WASTE ALLIANCE IRELAND

Towards Sustainable Resource Management



Feedback to the European Commission on the Targeted Revision of the Waste Framework Directive

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1. INTRODUCTION

Waste is one of the defining characteristics of the age in which we live – not only in terms of the huge amount of waste produced, but also the increasing varieties and technical changes in the types of waste generated, and their impact on the environment globally.

As early as 1971, nearly half a century ago, John McHale wrote that –

“The magnitude of our present industrial undertakings now forms a man-made ecological subsystem whose operation rivals in scale many of the natural processes in the biosphere. No longer constrained to the Earth’s surface, these techno-industrial activities go increasingly into and beyond the atmosphere, beneath the oceans, and transform vast amounts of the material resources of the planet to human purposes”.¹

Human societies have become a global force for transforming and moving huge amounts of materials, rivalling in quantities to natural processes such as volcanic eruptions, and erosion of soil by water and wind. The term Anthropocene, or “human era”, is appropriate, and the linear transformation of materials in the

¹ The Ecological Context, John McHale, 1971, page 23. London, Studio Vista Limited, 1971.

current “extract”, “transport”, “process”, “make” and “waste” activity is no small contributor to this undesirable situation and its damaging consequences.

1.1 The European Union takes up the Challenge of Addressing the Problem of “Waste”

Waste management comes within the scope of environmental policy (Article 192 of the TFEU), which aims to preserve, protect and improve the quality of the environment, protect human health and utilise natural resources prudently and rationally. The European Community was not slow to take up the waste management challenge; and, on 15 July 1975, the first Directive on waste was approved by the Council of Ministers, under Articles 100 and 235 of the Treaty establishing the European Economic Community.² The objectives of this early three-page Directive were not very different from the objectives of the current directive, namely, the protection of human health and the environment against harmful effects caused by the collection, transport, treatment, storage and tipping of waste, and the encouragement of the recovery of waste and the use of recovered materials in order to conserve natural resources.

Following a number of technical amendments to the above Directive, the second Directive on waste was adopted on 05 April 2006, approximately 31 years later.³ It is not our intention here to go into the reasons for this delay, but it surely indicates the difficulty in addressing in any meaningful way the complex problem of material resources, their extraction, utilisation and the resulting production and generation of waste.

The 2006 Directive defined key concepts such as waste, recovery and disposal, and it established certain essential requirements for the management of waste, primarily an obligation for an establishment or undertaking carrying out waste management operations to have a permit or to be registered with a national authority. Member States were required to draw up waste management plans, the Directive established key principles such as an obligation to handle waste in a way that does not have a negative impact on the environment or human health, and it encouraged the application of the EU waste hierarchy.

The 2006 Directive was subsequently amended by Directive 2009/31/EC of 23 April 2009, and repealed by Directive 2008/98/EC of 19 November 2008 on

² Council Directive of 15 July 1975 on waste (75/442/EEC).

³ Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on waste.

waste, which became known as the “Waste Framework Directive”, to which we will refer in our submission as the “WFD”.

The WFD established a waste hierarchy which favours the prevention of waste over (in order) preparing for re-use; recycling; other waste recovery options; and disposal of waste. The WFD requires Member States to take measures to prevent the generation of waste, to collect certain types of waste separately, and to regularly review prevention measures, food waste generation, and waste oils.

1.2 Need for Updating and Revision of the Waste Framework Directive

The WFD has now been in force for some 15 years, and is considered to be significantly outdated, and not consistent with current European policies and legislation on the environment, the circular economy, climate change, and other closely associated issues. Examples of more recent policy initiatives which have rendered the 2008 WFD out of date include the European Green Deal, a commitment to ‘simplify waste management for citizens and ensure cleaner secondary materials for businesses’.⁴ Furthermore, the Circular Economy Action Plan⁵ commits to significantly reducing total waste generation: it aims to halve the amount of residual (non-recycled) municipal waste by 2030, promote safer and cleaner waste streams, and ensure high-quality recycling.

Despite the legislative requirements of the WFD, the annual amounts of municipal waste generated have increased over the last decade; and inefficient waste-collection systems are considered to be one of the causes of low recycling rates, as well as the production of lower quality recyclates.

The incorporation of “*End-of-Waste*” into the 2008 WFD was intended to promote recycling and the use discarded materials and objects in order to produce useful materials and products – in essence it was intended as a tool to promote circular material flows by establishing the necessary technical criteria. Instead, the uncertainty of the definition, and the general complexity and vagueness of the 2008 WFD, has led to several cases in the CJEU. The uncertainty surrounding

⁴ Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions – The European Green Deal. COM(2019) 640 final. Brussels, 11 December 2019.

⁵ Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions – A new Circular Economy Action Plan for a cleaner and more competitive Europe. COM(2020) 98 final. Brussels, 11 March 2020.

how to define “recovery”, by which is meant the recovery of a portion of the energy embodied in waste, and not the recovery of the discarded materials, has also led to significant uncertainty and controversy.

In addition to the above general problems, the European Commission has found evidence that, for some specific waste streams, such as waste oils and textiles, the polluter-pays-principle is not being fully implemented, and that some of these wastes may be illegally disposed of, leading to pollution.

1.3 Call for Evidence and Public Consultation

On 25 January 2022, the European Commission issued a call for evidence on which to base a proposed updating of the Waste Framework Directive, thereby giving an opportunity to European citizens and stakeholders to give their views on the Commission's understanding of the serious problem of waste.⁶

The call for evidence stated that the Waste Framework Directive protects public health and the environment through the proper management of waste, and this is accomplished by applying the EU's waste hierarchy, which promotes waste prevention and re-use over waste recovery and disposal. The call for evidence also stated that the initiative of revising the Waste Framework Directive addresses environmental problems with transnational implications, including the impact of waste collection and treatment and the related greenhouse gas emissions and air pollution; it also addresses the indirect impacts resulting from the extraction and processing of virgin raw materials which could be replaced with secondary materials.⁷

The initiative would also improve waste management by:

- ✓ reducing waste generation including through re-use of products or components; and,
- ✓ reducing mixed waste and increasing preparation for re-use or recycling of waste by improving separate collection.

Zero Waste Alliance Ireland (ZWAI) did not make a submission to the European Commission at this preliminary call for evidence stage (the Commission received 198 valid submissions, covering a very wide range of waste-related issues and

⁶ https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13225-Environmental-impact-of-waste-management-revision-of-EU-waste-framework_en

⁷ Call for evidence for an impact assessment – Environmental impact of waste management – revision of EU waste framework. Ares(2022)577247 - 25/01/2022.

topics); but on 16 August 2022, ZWAI submitted a detailed response to the second phase of public consultation, emphasising and providing information to the European Commission on the problems of municipal waste, construction and demolition waste, electronic waste, planned obsolescence and the right to repair, and waste oils.⁸

At that public consultation stage, the Commission stated that the objectives of the revision of the WFD are to limit waste generation, increase re-use, and increase cost-efficient preparing for re-use and quality recycling, including for waste oils and textiles. The revision would explore opportunities for simplification to make legislation clearer and reduce burden on citizens and businesses. As part of this impact assessment, the Commission will also examine policy options related to the setting of EU-level targets for food waste reduction. The EU Farm to Fork Strategy calls for the establishment of such targets.

The aim of the public consultation was described as collecting additional evidence on the performance of the existing WFD; seeking opinions and insights about the problems of waste, examining the feasibility and possible impacts (economic, social and environmental) of alternative actions (including possible actions); and gathering examples of best practices and views on the subsidiarity of possible actions.

The Commission received 731 valid responses to this on-line public consultation, a clear indication of the interest shown by many EU citizens (264), businesses (159), non-government organisations (65), environmental organisations (14) and academic or research institutions (8).

Zero Waste Alliance Ireland (ZWAI) is very pleased to have the opportunity to provide additional feedback to the European Commission at this stage, when the Commission is considering the adoption of a revised targeted Waste Framework Directive, to be presented to the European Parliament and Council.

Even though we have some serious reservations about the Commission's currently adopted proposal for a "targeted" revision of the Waste Framework Directive, we believe that it will be an extremely important legislative component of the overall environmental, resource management and sustainability policies of the EU.

⁸ <https://www.zwai.ie/resources/2022/feedback-to-the-european-commission-on-the-revision-of-the-waste-framework-directive/>

2. ZERO WASTE ALLIANCE IRELAND (ZWAI)

At this point we consider that it is appropriate to mention the background to our submission, especially the policy and strategy of ZWAI.

2.1 Origin and Early Activities of ZWAI

Zero Waste Alliance Ireland (ZWAI), established in 1999, and registered as a company limited by guarantee in 2004, is a Non-Government Environmental Organisation (eNGO) and a registered charity. ZWAI has prepared and submitted to the European Commission, the Irish Government and to Irish State Agencies many policy documents on waste management, and continues to lobby the Irish Government and the European Commission on the issue of using resources more sustainably, on using resources sustainably, on promoting re-use, repair and recycling, and on development and implementation of the Circular Economy.

One of our basic guiding principles is that human societies must behave like natural ecosystems, living within the sustainable flow of energy from the sun and plants, producing no materials or objects which cannot be recycled back into the earth's systems, or reused or recycled into our technical systems, and should be guided by economic systems and practices which are in harmony with personal and ecological values.

Our principal objectives are:

- i) sharing information, ideas and contacts,
- ii) finding and recommending environmentally sustainable and practical solutions for domestic, municipal, industrial and agricultural waste management in Ireland, and for more efficient and ecologically appropriate uses of natural resources such as scarce minerals, water and soil;
- iii) lobbying Government and local authorities to implement environmentally sustainable waste management practices, including clean production, elimination of toxic substances from products, re-use, recycling, segregation of discarded materials at source, and other environmentally and socially beneficial practices;
- iv) lobbying Government to follow the best international practice and EU recommendations by introducing fiscal and economic measures designed to penalise the manufacturers of products which cannot be re-used, recycled or composted at the end of their useful lives, and to financially

- support companies making products which can be re-used, recycled or are made from recycled materials;
- v) raising public awareness about the long-term damaging human and animal health and economic consequences of landfilling and of the destruction of potentially recyclable or re-usable materials by incineration;
 - vi) investigating, raising public awareness and lobbying Irish Government departments and agencies about our country's failure to take adequate care of vulnerable and essential natural resources, including clean water and air, biodiversity, and soil;
 - vii) advocating changes in domestic and EU legislation to provide for more ecologically appropriate, environmentally sustainable and efficient uses of natural resources; and,
 - viii) maintaining contact and exchanging information with similar national networks in other countries, and with international zero waste organisations.

2.2 Our Basic Principles

Human communities must behave like natural ones, living comfortably within the natural flow of energy from the sun and plants, producing no wastes which cannot be recycled back into the earth's systems, and guided by new economic values which are in harmony with personal and ecological values.

In nature, the waste products of every living organism serve as raw materials to be transformed by other living creatures, or benefit the planet in other ways. Instead of organising systems that efficiently dispose of or recycle our waste, we need to design systems of production that have little or no waste to begin with.

There are no technical barriers to achieving a "zero waste society", only our habits, our greed as a society, and the current economic structures and policies which have led to the present environmental, social and economic difficulties.

"Zero Waste" is a realistic whole-system approach to addressing the problem of society's unsustainable resource flows – it encompasses waste elimination at source through product design and producer responsibility, together with waste reduction strategies further down the supply chain, such as cleaner production, product repairing, dismantling, recycling, re-use and composting.

ZWAI strongly believes that Ireland and other Member States, and the EU as a whole, should have a policy of not sending to other countries our discarded materials for further treatment or recycling, particularly to developing countries where local populations are being exposed to dioxins and other very toxic POPs. Relying on other countries' infrastructure to achieve our "recycling" targets is not acceptable from a global ecological and societal perspective.

2.3 What We are Doing

Our principal objective is to ensure that government agencies, local authorities and other organisations will develop and implement environmentally sustainable resources and waste management policies, especially resource efficiency, waste reduction and elimination, the promotion of re-use, repair and recycling, and the development and implementation of the Circular Economy.

As an environmental NGO, and a not-for-profit company with charitable status since 2005, ZWAI also campaigns for the implementation of the UN Sustainable Development Goals, including (but not limited to) Goal 12, Responsible Consumption and Production; Goal 6, Clean Water and Sanitation (having particular regard to the need to avoid wasting water); and Goal 15, to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and to halt and reverse land degradation and halt biodiversity loss.

In responding to many public consultations, members of ZWAI have made submissions and given presentations on:

- how Ireland and the European Union should address the problem of plastic waste (March 2019);
- the problem of single-use plastic packaging by the Irish food industry (November 2019);
- transforming the construction industry so that it could become climate-neutral (instead of its present position as a major emitter of greenhouse gases and toxicants);
- the general scheme of the Irish Government's Circular Economy Bill (October 2021);
- recovery and reuse of the phosphorus and nitrogen content of wastewater (2019 to 2022);
- proposed revision of the EU Regulation on Shipments of Waste (January 2022);

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- proposed revision of the Waste Framework Directive (August 2022);⁹
 - Ireland's energy security situation (October 2022);
 - Ireland's Fourth National Biodiversity Action Plan (November 2022);
 - Ireland's National Bioeconomy Action Plan 2023-2025 (January 2023);
 - Ireland's draft Waste Management Plan for a Circular Economy (July 2023);¹⁰
 - the problem of disposable vaping devices (July 2023);¹¹
 - the rapidly increasing European and global problem of waste electronic and electric equipment (WEEE, September 2023);¹²
 - observations to the European Commission on a Proposed EU Directive on Soil Monitoring and Resilience (November 2023);¹³ and,
 - observations to the Department of the Environment, Climate and Communications on the Irish Government's Green Public Procurement Strategy and Action Plan (November 2023).¹⁴

⁹ Feedback to the European Commission on the revision of the Waste Framework Directive; ZWAI, 16 August 2022. <https://www.zwai.ie/resources/2022/feedback-to-the-european-commission-on-the-revision-of-the-waste-framework-directive/>

¹⁰ Submission to the Regional Waste Management Planning Offices on the draft Waste Management Plan for a Circular Economy; ZWAI, 05 July 2023: <https://www.zwai.ie/resources/2023/submission-on-the-draft-waste-management-plan-for-a-circular-economy/>

¹¹ Submission to the Department of the Environment, Climate and Communications in Response to the Department's Public Consultation on Disposable Vaping Devices; ZWAI, 27 July 2023: <https://www.zwai.ie/resources/2023/submission-to-the-decc-on-disposable-vapes-and-why-they-should-be-banned/>

¹² Submission by ZWAI to the European Commission on Waste from Electrical and Electronic Equipment — Evaluating the EU Rules; ZWAI, 22 September 2023. <https://www.zwai.ie/resources/2023/waste-from-electrical-and-electronic-equipment-weee-evaluating-eu-rules/>

¹³ Observations and Feedback to the European Commission on the Proposed EU Directive on Soil Monitoring and Resilience; ZWAI, 03 November 2023. <https://www.zwai.ie/resources/2023/submission-on-the-proposed-eu-directive-on-soil-monitoring-and-resilience/>

¹⁴ Submission to the Department of the Environment, Climate and Communications in Response to the Department's Public Consultation on a draft Green Public Procurement Strategy and Action Plan; ZWAI, 17 November 2023. <https://www.zwai.ie/resources/2023/submission-to-the-decc-on-the-draft-green-public-procurement-strategy-and-action-plan/>

It will be clear that ZWAI is primarily concerned with the very serious issue of discarded substances, materials and goods, whether from domestic, commercial or industrial sources, how these become “waste”, and how such “waste” may be prevented by re-design along ecological principles. These same ecological principles can be applied to the many ways in which we abstract and use water as a resource, and to the equivalent volumes of wastewater produced as a consequence of these uses.

ZWAI is represented on the Irish Government’s Water Forum (An Fóram Uisce), is a member of the Irish Environmental Network and the Environmental Pillar, and is funded by the Department of Communications, Climate Action and the Environment through the **Irish Environmental Network**.

In 2019 ZWAI became a full member of the **European Environment Bureau** (EEB); and a member of the **Waste Working Group** of the EEB. Through the EEB, we contribute to the development of European Union policy on waste and the Circular Economy. In November 2021, the EEB established a **Task Force on the Built Environment**; ZWAI is a member of this group, and we contribute to discussions on the sustainability of construction materials, buildings and on the built environment.

3. THE PROPOSED TARGETED WASTE FRAMEWORK DIRECTIVE – STRENGTHS AND WEAKNESSES

3.1 Preliminary Observations

ZWAI welcomes the proposal for a revision of the Waste Framework Directive, and in section 1.2 above, we have provided a number of reasons why the Directive should be updated and revised.

An important additional reason is that the published reviews on waste prevention produced by the European Environment Agency show that the EU is not on track to meet its policy goals of significantly reducing waste generation and increasing recycling.¹⁵

For example, only 38% of total waste (in 2018), and 49% of municipal waste (in 2021),¹⁶ was recycled in the EU; with the data varying considerably among Member States, ranging from 10% to over 60%. The initial conclusions of the EEA assessment are that over half of the Member States are at risk of not reaching the 2025 preparation for re-use and recycling targets for municipal waste. Problems identified include sub-optimal waste collection, sorting and treatment, leading to resources being lost and to greater environmental and human health impacts.

Other areas of concern include the sub-optimal collection and re-use or recycling of, for example:

- ◆ Bulky waste items, such as furniture;
- ◆ End of-life vehicles and tyres;
- ◆ Electrical and electronic equipment;
- ◆ Textiles, including clothing and footwear; and,
- ◆ Construction and demolition waste (building materials and components).

The EEA assessments have reported that low recycling rates, as well as lower quality of recyclates, are in part due to inefficient waste-collection systems; and these systems vary widely across the EU, being dependent on local conditions and overall waste-management choices in the Member States. In many Member

¹⁵ Waste prevention in Europe — policies, status and trends in reuse in 2017. EEA Report No 4/2018. European Environment Agency, 2018.

¹⁶ https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Municipal_waste_statistics

States, waste management policies and activities are not based on the principles and practices proven to deliver optimal results for achieving EU targets for the preparation of waste for re-use and recycling.

Evidence from some Member States reveals that, in addition to accidental escapes or spillages of oil, some quantities of waste oil may still be illegally discharged to surface water, ground water or allowed to soak into the soil, thereby causing significant and possibly long term pollution. About 61% of the waste oil collected is regenerated, while the remainder is mostly used as fuel. When burned, these waste-oil-derived fuels generate higher GHG emissions than if the oil were to be regenerated or re-used (without burning), and this utilisation of waste oil contributes more to climate change and resource depletion. Recycling rates for collected waste oils vary greatly, indicating significant possibilities for improvement in some Member States.

As part of this impact assessment, the Commission is also carrying out a separate public consultation (with the same closing date of **22 November 2023**) on the adoption of a proposed Directive on the setting of EU-level targets for **food waste reduction**, especially as the EU Farm to Fork Strategy calls for the establishment of such targets.¹⁷

In our response to this current public consultation on the revision of the Waste Framework, Zero Waste Alliance Ireland will focus on four areas:

- ✓ Range of issues addressed in the proposed Directive;
- ✓ Deficiencies in the proposed Directive;
- ✓ Extended producer responsibility;
- ✓ Waste and climate change;
- ✓ Textile waste and mattress waste;
- ✓ Construction and demolition waste; and,
- ✓ Waste electrical and electronic equipment (WEEE).

¹⁷ https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13223-Food-waste-reduction-targets_en

3.2 Summary of the Proposed Targeted Revision of the Waste Framework Directive (WFD), and Comparison with the Previous Submission by Zero Waste Alliance Ireland

The proposed updating and targeted revision of the WFD amends certain articles of the existing Waste Framework Directive. The Commission's adopted proposal outlines the changes made to the Directive, including reporting requirements for Member States and the adoption of delegated acts by the Commission. The proposed revision also takes into account other EU directives on waste and the environment. Specifically, the proposed revision amends:

- Article 37 – which requires Member States to report data on the implementation of certain articles of the directive to the European Environment Agency and the Commission;
- Article 38 – which confers on the Commission the power to adopt delegated acts for a period of five years;
- Article 3 – insertion of new paragraphs that define the term "*producer of textile, textile-related and footwear products listed in Annex IVc*" and clarify the scope of the term;
- Article 11 – replacement of the third sentence in paragraph 1, which now requires Member States to set up separate collection systems for paper, metal, plastic, and glass, subject to Articles 10(2) and (3); and,
- Article 11b – replacement of paragraph 1, which now requires the Commission, in cooperation with the European Environment Agency, to draw up reports on the progress towards the attainment of the targets laid down in Article 9a(4), Article 11(2), points (c), (d), and (e), and Article 11(3) at the latest three years before each deadline laid down therein.

The proposed revision also inserts new articles, including:

- Article 22a – which establishes an extended producer responsibility scheme for household textile products;
- Article 22b – which requires member states to establish a register of producers of textile, textile-related, and footwear products listed in Annex IVc to monitor compliance with the extended producer responsibility scheme;
- Article 22c – which sets out the obligations of producers of textile, textile-related, and footwear products listed in Annex IVc, including the obligation to register with the competent authority of the member state where they

are established and to provide information on the products they make available on the market;

- Article 22d – which sets out the obligations of the competent authority, including the obligation to receive applications for registration, grant registrations, and charge cost-based and proportionate fees to producers for the processing of applications; and,
- Article 29a – which requires Member States to review and adapt their food waste prevention programs to attain the targets set out in Article 9a(4).

While the above proposed amendments are very desirable and are welcomed by Zero Waste Alliance Ireland, it is a matter of concern for us that very few of the recommendations we made in our earlier submission in response to the Commission’s public consultation appeared to be taken into account.¹⁸ While we cannot, and should not, expect our recommendations to be adopted, even partially, it is disappointing to see that the current proposed targeted revision fails to include many of what we consider to be important revisions of the WFD.

The submission made by the Zero Waste Alliance Ireland to the European Commission in August 2022 was in response to a public consultation on the revision of the Waste Framework Directive.

Our submission stressed the importance of considering waste within the context of other policy areas, such as energy, climate, and biodiversity. The submission also highlighted the need for more ambitious policies and recycling targets to be set for the period up to 2035. The submission specifically focused on construction and demolition waste, and recommended that the revised WFD should include a mandatory requirement that the construction industry fully adopt the principle of extended producer responsibility. The submission also recommended the development and adoption of harmonized European standards for materials discarded during construction or deconstruction of a building, to make them more easily acceptable and reusable. The submission concluded by calling for stricter measures to include the construction industry in the circular economy and the use of more sustainable building materials to be mandated at policy level.

Despite our concerns, we are pleased to note that our August 2022 submission and the current proposal by the Commission for a targeted revision of the WFD

¹⁸ Feedback to the European Commission on the revision of the Waste Framework Directive; ZWAI, 16 August 2022. <https://www.zwai.ie/resources/2022/feedback-to-the-european-commission-on-the-revision-of-the-waste-framework-directive/>

share some common objectives in the area of waste management strategy; and these include:

- ✓ Prioritizing waste prevention, preparing for re-use, and recycling over other recovery options and disposal in line with the waste hierarchy;
- ✓ Implementing the polluter pays principle to ensure that producers bear the costs of waste management;
- ✓ Establishing extended producer responsibility schemes to cover the costs of collection, reuse, and recycling of products;
- ✓ Setting up separate collection systems for waste to increase recycling rates;
- ✓ Developing and adopting harmonized European standards for materials discarded during production or consumption to make them more easily acceptable and reusable;
- ✓ Improving waste management in line with the circular economy principles to reduce environmental and climate impacts, increase environmental quality, and improve public health;
- ✓ Reducing the environmental and climate impacts of waste generation and promoting the transition to a circular economy and decarbonization;
- ✓ Reviewing and adapting waste prevention programs to attain the targets provided for in the Waste Framework Directive;
- ✓ Ensuring that waste management policies consider waste within the context of other policy areas, such as energy, climate, and biodiversity;
- ✓ Encouraging the use of more sustainable materials and practices in waste management and promoting the circular economy in different sectors;
- ✓ Inclusion of textile waste in the revised directive;
- ✓ Highlighting the need for harmonized European standards for materials discarded during production or consumption to make them more easily acceptable and reusable;
- ✓ Emphasising the need to include the textile industry in the circular economy and to promote the use of more sustainable materials and practices in textile waste management; and,
- ✓ Implementation of the polluter pays principle and the prioritization of waste prevention, preparing for re-use, and recycling of textiles waste over other recovery options and disposal.

The proposed targeted revision of the WFD by the EU Commission includes the above points.

It is therefore our submission that the proposed measures on textile waste are most welcome, especially the focus on Extended Producer Responsibility (EPR), which will help improve the circularity of the textile industry. Increased circularity in this sector will result in reduced greenhouse gas emissions. However, we are concerned that these measures do not go far enough to mitigate greenhouse gas emissions and associated climate change. We recommend stricter levies on companies which contribute especially to textile waste (fast fashion), with an additional focus on other waste streams.

It is also our submission that the proposed measures on food waste are appropriate; they will help reduce greenhouse gas emissions and improve food security for the future. However, we are concerned with the potential for non-compliance of member states. In such a scenario it is worth remembering the principle of “*Van Gend en Loos*” whereby EU Treaties are capable of creating legal rights enforceable by both natural and legal persons in the courts of Member States.¹⁹

The consequences of this case are that Member States may be required to pay damages to affected citizens and organisations, on the basis that a failure to reduce greenhouse gas emissions by a Member State would adversely affect the lives of citizens in the near future by allowing climate change to continue. Climate change has the potential to cause severe disruption to food supply, increase heat wave mortality and to increase destruction by floods and storms. Therefore, the failure of Member States to protect their citizens through climate change mitigation measures has significant legal ramifications.

The impacts of these climate change consequences are outlined below, with historical context. Additional measures to combat to climate change will be suggested.

¹⁹ Rasmussen, M., 2014. Revolutionizing European law: A history of the *Van Gend en Loos* judgment. *International Journal of Constitutional Law*, 12(1), pp.136-163.

3.3 Deficiencies in the Proposed Targeted Revision of the Waste Framework Directive

The original call by the European Commission for submissions had a broad focus, describing the consultation as a means of collecting additional evidence for the revision of the Waste Framework Directive (WFD), which aims to increase the level of protection of the environment and public health from the impacts of waste management. This public consultation aimed to collect additional evidence, to seek opinions and insights about the problem, to examine the feasibility and possible impacts of alternative actions, and to gather examples of best practices and views on the subsidiarity of possible actions (see section 1.3 above).

The proposed objectives were to limit waste generation, increase re-use of waste, and increase cost-efficient preparing for re-use and quality recycling, particularly for textile waste, while the proposed revision would also explore opportunities for simplification to make legislation clearer and reduce burden on citizens and businesses.

However, these reasonably broad objectives were subsequently narrowed down to a smaller number of objectives related to textile waste and food waste; and, as stated by the Commission:

“Reflecting on the commitments made, this proposal to amend the Waste Framework Directive (WFD) focuses on two resource intensive sectors: textiles and food, with the following general objectives:

- To reduce environmental and climate impacts, increase environment quality and improve public health associated with textiles waste management in line with the waste hierarchy,*
- To reduce the environmental and climate impacts of food systems associated with food waste generation. Preventing food waste would also contribute to food security.”*

This narrowing down of the original objectives can be seen in the responses to the Commission’s call for evidence in February 2022 (see section 1.3 above), in which many stakeholders (a total of 198 submissions was received) submitted feedback unrelated to food or textiles.

It is therefore our submission that this narrowing down of the objectives, aims and contents of the proposed revision of the Waste Framework Directive represents a lost opportunity to address a number of significant problems associated with the Directive.

Our concern about the deficiencies in the proposed targeted revision of the WFD are reflected in the opinion of the European Commission's Regulatory Scrutiny Board which examined the draft on 15 March 2023.²⁰

The overall opinion of the European Commission's Regulatory Scrutiny Board was **negative**, the reason being given by the Board was that the draft revision contained the following significant shortcomings:

- (1) The intervention logic for both food and textile waste sectors was not clear and not specific enough;
- (2) The report did not sufficiently demonstrate the cross-border dimension of the problems and the EU added value;
- (3) Regarding food waste, it did not demonstrate the need for and effectiveness of setting a mandatory reduction target at EU level;
- (4) The options were not adequately presented or justified; and,
- (5) The assessment and the comparison of options were not sufficiently developed.

The Regulatory Scrutiny Board made some 11 recommendations for improvement of the proposed revision of the WFD; we have examined carefully these recommendations, and we are in full and complete agreement with them.

In May 2023, the Regulatory Scrutiny Board re-examined the Commission's proposal for an amended WFD, and reached a second opinion that the draft was **positive with reservations**. The Board noted that the proposal still contained significant shortcomings, but it gave a positive opinion with reservations because it expected the Commission to rectify the following aspects:

- (1) The report does not demonstrate the effectiveness of setting EU-level mandatory Member State food waste reduction targets in addressing the identified problems;
- (2) The document did not convincingly explain how the targets should be implemented, nor did it assess how they are feasible; and,

²⁰ Impact assessment / Waste Framework Directive – Food Waste Reduction Targets. Opinion by the European Commission Regulatory Scrutiny Board, Brussels.

- (3) The proposed revision of the WFD did not provide any alternative options for measures on food waste reduction other than mandatory targets.

In its second assessment, the European Commission's Regulatory Scrutiny Board made some 10 recommendations for improvement of the proposed revision of the WFD; we have examined carefully these recommendations, and we are in full and complete agreement with them.

In addition to the concerns of the Regulatory Scrutiny Board, Zero Waste Alliance would submit that there are further significant deficiencies and shortcomings in the proposed targeted revision of the WFD, in particular:

- ◆ The proposed revised Directive fails to address environmental problems with transnational implications;
- ◆ The Directive does not adequately address the impact of waste collection and treatment and the related greenhouse gas emissions and air pollution; and,
- ◆ The proposed revised Directive fails to address the indirect impacts resulting from the extraction and processing of virgin raw materials which could be replaced with secondary materials in a circular economy.

It is also our observation that, before this "targeted revision" was proposed by the Commission, the EU policy on food waste and textile waste appeared to be reasonably comprehensive, though with the following major weaknesses and exceptions:

- i) Much more ambitious and socially just food waste reduction targets are needed, including an increase to 50% reduction of food waste by the year 2030;
- ii) The scope of the food waste reduction targets should be extended so that they apply to the entire food supply chain, from farm to fork;
- iii) In the area of textile waste, separate waste management performance targets are needed, covering collection, reuse, recycling (including fibre-to-fibre recycling), and textile waste reduction targets should be set at a national level in each Member State;
- iv) The proposed targeted revision is very weak in the area of waste exports, and should include a requirement for Member States to undertake a minimum number of regular inspections of waste (including textiles) before export;

- v) Zero Waste Alliance Ireland has previously argued that the EU as a whole should have a policy of not sending to other countries our discarded materials for further treatment or recycling, particularly to developing countries where local populations may be exposed to dioxins and other very toxic Persistent Organic Pollutants (POPs); and relying on other countries' infrastructure to achieve our "recycling" targets is not acceptable from a global ecological and societal perspective; and the proposed targeted revision of the WFD does not address this international issue;
- vi) Extended Producer Responsibility (EPR) has a key role to play in waste elimination and reduction, and therefore EPR should be required for a much wider range of products, and EPR should be introduced much more quickly for all relevant products, to bring to an end the current situation which results in households and small businesses having to bear the cost of separate collection of wastes;
- vii) Social enterprises and charities (including environmental NGOs) should be able to participate in waste prevention, repairing and recycling without additional costs;
- viii) Failure to include commercial and industrial waste, and especially construction and demolition waste, is a significant gap in the proposed Directive, and a missed opportunity; particularly when it is considered that commercial and industrial waste makes up 26% of total waste generated (compared with 10% of the total for municipal solid waste);
- ix) Given that large quantities of mixed residual wastes are converted to Solid Recovered Fuel (SRF) or Refuse Derived Fuel (RDF) as a raw material for mass burning in industry, the proposed Directive should include much greater sorting of residual waste and an absolute prohibition on the burning or landfilling of potentially recyclable materials;
- x) The absence of definitive "*end of waste*" criteria and the resulting problems clearly indicate that Article 6 of the proposed revised WFD should be significantly strengthened by the European Commission prescribing EU-wide end-of-waste criteria for paper, plastics, end-of-life tyres and other suitable wastes, including electronic wastes and household equipment (at present, these objects, when deposited in a public amenity centre, are considered as "waste", and cannot be given or taken for repair, even when repair is possible);

- xi) The European Commission's proposed and agreed definitive "*end of waste*" criteria should be recognised by other EU Member States in the process of cross-border shipments in order to ensure mutual recognition and a reduction in barriers to repair and re-using.

The above suggestions are a selection of many which come to mind as methods to improve waste elimination, reuse, repair and recycling; and, by not including them in the proposed Directive, an opportunity is lost.

4. WASTE AND CLIMATE CHANGE

We referred briefly above to the connection between society's waste of resources, and the need to replace these resources, with consequential adverse effects on the Earth's climate.

Climate change is a direct result of not properly managing our waste, it is also a direct result of the linear model on which society has been structured. A circular system, which should be highlighted more strongly as fundamental in the WFD, would ultimately reduce carbon emissions which are a driving force behind climate change.

The 2019 European Green Deal ambitiously stated the goal of making Europe the world's first climate-neutral continent, essentially steering Europe towards becoming a zero waste society.²¹ This is physically impossible without a collaborative approach between policies, sectors and countries. The current WFD only mentions two waste streams, which is also far too narrow to have any real impact on our carbon emissions as a continent, and therefore any impact at all on climate change.

We are in a climate crisis and this slow pace of obtaining approval, as well as the lack of collaboration and integration of policies into a wider model does not serve us as in our attempts to mitigate or slow down climate change.²²

Before investigating the impact of climate change from a historical perspective in the context of the WFD, it is firstly important to understand why this topic is relevant to this submission. Solid waste contributes directly to greenhouse gas emissions through the generation of methane from the anaerobic decay of waste in landfills, and the emission of nitrous oxide from our solid waste combustion

²¹ ZWAI 2022 WFD submission (page 2)

²² Ibid, page 19

facilities. Both of these greenhouse gases have high global warming potential: methane has 21 times the warming potential of carbon dioxide and nitrous oxide has 310 times the warming potential.²³

Additionally, in 2018, on average only 47% of municipal waste was recycled in the EU28 which means 53% of waste was destined for landfill or incineration. Burning waste is becoming an increasingly common practice in Europe – it is the waste equivalent of ‘cancel culture’ and it avoids having huge piles of rubbish on the Earth’s surface. The problem is that it’s not only the impact on the Earth’s surface we should be worried about.²⁴

Counting the emissions generated by the incineration of all municipal waste reveals that approximately 1.1 tonnes of carbon dioxide (CO₂) are released per tonne of waste, contributing to the escalation of greenhouse gas emissions and exacerbating climate change. While incineration may seem to address the immediate issue of visible waste, it poses an unseen threat in the long run.

Incinerators emit a range of pollutants, including nitrogen oxide, particulate matter, sulphur dioxide, ozone, and carbon dioxide, in addition to toxic residues. Recent data indicates that in 2017, nearly 70,000,000 tonnes of municipal waste was incinerated in the EU + UK, resulting in the release of around 77,000,000 tonnes of CO₂. To put this into perspective, the entire CO₂ emissions from France in 2017 amounted to 300,000,000 tonnes. More recently, in 2019, the global production and incineration of plastic alone contributed to over 850,000,000 tonnes of greenhouse gases. These emissions therefore significantly contribute to the overall carbon dioxide output from Europe.²⁵

The industry “solution” to waste rolling out across Europe is known as Waste-to-Energy which is essentially incineration plus the potential creation of energy for use in various processes. This new practice is clearly a misguided “new shiny toy” that the industry is playing with, and is being promoted as a clean alternative to fossil fuels and landfills. Yet, in 2017, over 40,000,000 tonnes of fossil CO₂ were emitted from Waste-to-Energy incinerators in the EU28 in 2017.

Waste-to-Energy, just like incineration, relies on carbon feedstocks to operate, making it completely dependent on fossil fuels as well as generating them. Clearly

²³ <https://portal.ct.gov/DEEP/Reduce-Reuse-Recycle/Climate-Change/Climate-Change-and-Waste#:~:text=Our%20Wasteful%20Impact%20on%20Climate%20Change&text=Solid%20waste%20contributes%20directly%20to,our%20solid%20waste%20combustion%20facilities.>

²⁴ <https://zerowasteurope.eu/2020/09/no-time-to-waste-incineration-and-waste-to-energy/>

²⁵ <https://zerowasteurope.eu/2020/09/no-time-to-waste-incineration-and-waste-to-energy/>

Waste-to-Energy is not the solution. We urgently need to phase out incineration of waste across Europe, and harmonise climate policy to include Waste-to-Energy practices in reporting.²⁶ “Energy recovery” is not a solution for our waste and is a driver in climate change. We therefore find it relevant to outline the importance of keeping climate change closely linked to waste management practices, and therefore an integral aspect of the WFD

4.1 Climate Change in History

4.1.1 Late Antique Little Ice Age (LALIA)

The current Anthropogenic climate change is not the first climate change event in recorded history, **though the difference between now and then is that the climate change we face today is completely human-driven.**

The Late Antique Little Ice Age, from 536 CE to roughly 560 CE, may have seen temperatures in the Northern Hemisphere drop by a 1.0°C in less than a decade.²⁷

A study by Büntgen et al (2016) used tree-ring evidence from the Russian Altai and European Alps to reveal summer temperatures over the past two millennia. Sudden, long-lasting and spatially synchronized cooling possibly due to large volcanic eruptions were inferred to have occurred in 536, 540 and 547 AD.²⁸

The LALIA can therefore be considered as an additional environmental driver of crop failure, famine and plague, as well as a possible trigger for political, societal and economic turmoil. This climate change may have resulted in periods of drought and shorter growing seasons in Europe and central Asia. The migration of peoples from the east towards Europe possibly led to the spread and outbreak of the Justinian plague throughout the Eastern Roman Empire. The shorter growing seasons may have resulted in conflicts over resources in the central Asian steppe, leading to the rise of the Türks and subsequent raids in Northern China. Simultaneously, climate change may have driven the Slavic peoples from their homeland in the Carpathians.

²⁶ Ibid

²⁷ Peregrine, P.N., 2020. Climate and social change at the start of the Late Antique Little Ice Age. *The Holocene*, 30(11), pp.1643-1648.

²⁸ Büntgen, U., Myglan, V.S., Ljungqvist, F.C., McCormick, M., Di Cosmo, N., Sigl, M., Jungclaus, J., Wagner, S., Krusic, P.J., Esper, J. and Kaplan, J.O., 2016. Cooling and societal change during the Late Antique Little Ice Age from 536 to around 660 AD. *Nature geoscience*, 9(3), pp.231-236.

4.1.2 The Little Ice Age and General Climate Crisis

The Little Ice Age lasted from around 1300 to 1800 A.D. Temperature change may have been as much as -0.8°C .²⁹ The cause may have been reduced heating of the atmosphere by the sun (radiative forcing), possibly due to a massive volcanic eruption blocking out sunlight,³⁰ a similar situation to the Late Antique Little Ice Age. Severe winters led to the abandonment of Greenland, while the population of Iceland fell by 50%. European society shifted from feudalism towards early capitalism. The General Crisis throughout 17th Century in Europe coincided with low temperatures. Famines, wars, disease outbreaks and societal change occurred.

Poor harvests were common in this period, with one occurring on average every 4 years.³¹ Thomas Munck³² records in *“Provincial revolts, civil war and the ‘crisis of the 17th century’”*.

In 1647 the price of wheat in England rose to an unprecedented level. The price of a secondary staple like oats increased to one-and-a-half times its normal level. In Paris, the price of best wheat were higher than ever before for six years from 1648 to 1654; the annual average twice reached a level three times the norm for settled years. The years 1648–51 were times of widespread food shortages over much of Europe, including not only the north-west and parts of the Mediterranean but also the markets of east-central Europe. It is no coincidence that one of the major sequences of urban and rural unrest occurred precisely then.

“Major upheavals occurred in Scotland, Ireland and England, as well as in Catalonia and in Portugal, from around 1640; in Naples and Sicily in 1647; in Denmark in 1648 and again in 1660; in France from 1648 through into the early 50s; in Poland and Muscovy after 1648; in Sweden around 1652; and in many parts of the German lands at the end of the bitter and destructive Thirty Years War”.

²⁹ Lean, J. and Rind, D., 1999. Evaluating sun–climate relationships since the Little Ice Age. *Journal of atmospheric and solar-terrestrial physics*, 61(1-2), pp.25-36.

³⁰ Mann, M.E., Zhang, Z., Rutherford, S., Bradley, R.S., Hughes, M.K., Shindell, D., Ammann, C., Faluvegi, G. and Ni, F., 2009. Global signatures and dynamical origins of the Little Ice Age and Medieval Climate Anomaly. *science*, 326(5957), pp.1256-1260.

³¹ Slicher Van Bath, B.H., 1977. Agriculture in the vital revolution. *The Cambridge economic history of Europe*, 5, pp.42-132.

³² Munck, T. and Munck, T., 1990. Provincial revolts, civil war and the ‘crisis of the 17th century’. *Seventeenth Century Europe: State, Conflict and the Social Order in Europe 1598–1700*, pp.199-236.

Gülay Yılmaz³³ writes of Istanbul in the 17th century: “In the first half of the 17th century alone, there were six major uprisings: the regicide of Osman II (1622); the uprising against Murat IV (1632); the dethronement of İbrahim I (1648); the uprisings against the janissary aghas (1651) and against İbşir Mustafa Pasha (1655); and the Vakvakiye Incident (1656). These were followed by the dethronement of Mehmed IV (1688), the Edirne Incident and dethronement of Mustafa II (1703), and the Patrona Halil uprising and dethronement of Ahmed III (1730).”

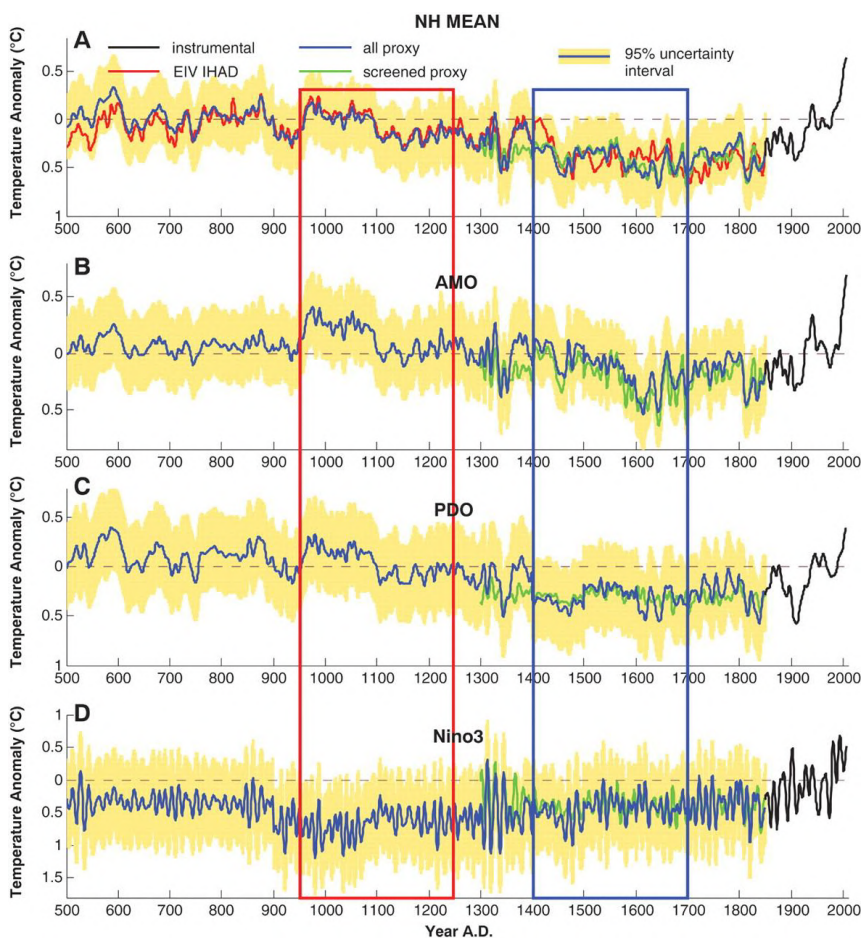


Figure 4.1.2: These graphs show the temperature decrease from 1400 to 1700 known as the Little Ice Age. Note the dramatic increase in temperature from 1900 to 2000.

³³ Yılmaz, G., 2021. Urban protests, rebellions, and revolts. In: A Companion to Early Modern Istanbul (pp. 555-580).

The role of climate change in increasing agitation may have continued up until the end of the Little Ice Age (LIA). The French Revolution, which is perhaps the best known revolt of this period occurred in 1799, just at the end of the LIA.

4.1.3 Future Climate Change Scenarios and Civil Unrest

The theories presented above on climate change induced social change assume that the “Late Antique Little Ice Age” and the “Little Ice Age” saw temperature changes of -1°C and -0.8°C respectively. However, the consequences of current day human-induced climate change of $+1.5^{\circ}\text{C}$ to $+5^{\circ}\text{C}$ are unknown and can only be speculated upon.

4.1.4 Increased Precipitation, Floods and Storms

Global warming will increase the water-holding capacity of the atmosphere, resulting in increases of precipitation and evapotranspiration across the globe.³⁴ A paper in *Nature* corroborates this: human-influenced global warming may be partly responsible for current increases in heavy precipitation, given that the water-holding capacity of the atmosphere increases with increasing temperature.³⁵

Between 2000 and 2006, more than 60% of all natural disasters were storms and floods; 1,885 cataclysmic events that killed more than 57,000 people.³⁶

Civil unrest may increase following floods and storms, due to damage to infrastructure, homes, agriculture, food and water supplies leading to fears of scarcity. Rapid-onset disasters often produce refugees. The effects of storms and floods on civil unrest may be variable and further study is needed in this area.³⁷

³⁴ Howden, S.M., Soussana, J.F., Tubiello, F.N., Chhetri, N., Dunlop, M. and Meinke, H., 2007. Adapting agriculture to climate change. *Proceedings of the National Academy of Sciences*, 104(50), pp.19691-19696.

³⁵ Min, S.K., Zhang, X., Zwiers, F.W. and Hegerl, G.C., 2011. Human contribution to more-intense precipitation extremes. *Nature*, 470(7334), pp.378-381.

³⁶ Schellnhuber, H.J., 2010. *Climate change as a security risk*. Routledge.

³⁷ Nardulli, P.F., Peyton, B. and Bajjalieh, J., 2015. Climate change and civil unrest: the impact of rapid-onset disasters. *Journal of Conflict Resolution*, 59(2), pp.310-335.

Models predict increasing trend of floods in the Elbe basin of Germany and more frequent extreme droughts in the Rhine basin in 2061–2100.³⁸ All European Countries will experience an increase in deaths as a result of heatwaves in the future,^{39 40} though equatorial regions will suffer more heatwave-related deaths. Effective climate policies are required to minimize increases in ambient temperatures and prevent the associated negative impacts on human health.

Climate change will result in increased precipitation in Japan with associated increased run-off from agriculture, resulting in increased phosphorous and nitrogen pollution of rivers. The increased temperature will accelerate nutrient leaching leading to water pollution, eutrophication of rivers and lakes and biodiversity loss.⁴¹

4.1.5 Soil Erosion and Drought

Climate change may lead to increased soil erosion,⁴² with associated decline of soil organic matter content and soil structure, leading to decay in soil fertility and water-holding capacity, and ultimately to a reduced food security and vegetation cover.⁴³

4.1.6 Food Insecurity and Civil Unrest

Food security has led to civil unrest and violent uprisings; higher prices, especially for food and fuel, are associated with increases in urban protest and rioting, which

³⁸ Huang, S., Krysanova, V. and Hattermann, F., 2015. Projections of climate change impacts on floods and droughts in Germany using an ensemble of climate change scenarios. *Regional Environmental Change*, 15, pp.461-473.

³⁹ Amengual, A., Homar, V., Romero, R., Brooks, H.E., Ramis, C., Gordaliza, M. and Alonso, S., 2014. Projections of heat waves with high impact on human health in Europe. *Global and Planetary Change*, 119, pp.71-84.

⁴⁰ Guo, Y., Gasparrini, A., Li, S., Sera, F., Vicedo-Cabrera, A.M., de Sousa Zanotti Stagliorio Coelho, M., Saldiva, P.H.N., Lavigne, E., Tawatsupa, B., Punnasiri, K. and Overcenco, A., 2018. Quantifying excess deaths related to heatwaves under climate change scenarios: A multicountry time series modelling study. *PLoS medicine*, 15(7), p.e1002629.

⁴¹ Fan, M. and Shibata, H., 2015. Simulation of watershed hydrology and stream water quality under land use and climate change scenarios in Teshio River watershed, northern Japan. *Ecological Indicators*, 50, pp.79-89.

⁴² Marshall, E. and Randhir, T., 2008. Effect of climate change on watershed system: a regional analysis. *Climatic Change*, 89(3-4), pp.263-280.

⁴³ Crosson, P., 1997. Will erosion threaten agricultural productivity?. *Environment: Science and Policy for Sustainable Development*, 39(8), pp.4-31.

can have adverse effects on institutions.⁴⁴ Furthermore, food insecurity can be a threat multiplier, as violent uprisings can lead to further food insecurity. In late 2010, the Arab Spring protests began, food price spikes were likely a factor in instigating the unrest.⁴⁵ A Food Price Index spike in 2011 occurred at the same time as the Arab Spring. The middle East and Africa are vulnerable to food insecurity due to the scarcity of arable land and water.⁴⁶ Climate change may lead to rapid increases in water scarcity due across many regions of the globe, up to 2.0°C.⁴⁷ Therefore, the Mediterranean region in Europe may experience similar food insecurity in the future due to climate change. Furthermore, migration induced by climate change may force many rural people to relocate to cities which may exacerbate food insecurity in some regions.



Figure 4.1.6 *Food price spikes may have been a contributing factor to the people's dissatisfaction with governments in the lead up to the Arab Spring protests.*

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- ⁴⁴ Hendrix, C. and Brinkman, H.J., 2013. Food insecurity and conflict dynamics: Causal linkages and complex feedbacks. *Stability: International Journal of Security and Development*, 2(2).
- ⁴⁵ Tree, T., 2014. Food Insecurity and Unrest in the Arab Spring. Retrieved from E-International Relations Students: <http://www.e-ir.info/2014/09/07/food-insecurity-and-unrest-in-the-arab-spring>.
- ⁴⁶ Barrett, C.B. and Upton, J.B., 2013. Food security and sociopolitical stability in sub-Saharan Africa. *Food security and sociopolitical stability*, p.323.
- ⁴⁷ Gosling, S.N. and Arnell, N.W., 2016. A global assessment of the impact of climate change on water scarcity. *Climatic Change*, 134, pp.371-385.

4.1.7 The Linear Economy and Greenhouse Gas Emissions

The “take-make-break” linear economy contributes massive greenhouse gas emissions by relying on fossil fuels for easily accessible energy and raw materials for production. Breaking the link between economic growth and waste generation must be achieved in order to eliminate waste generation and to reduce the quantities of municipal waste currently being generated.

Single-use products necessitate the further exploitation of fossil fuels to keep up with demand, further increasing greenhouse gas emissions.

The transition to a circular economy will provide a solution to this downward spiral. Decreasing greenhouse gas emissions in line with the Paris Agreement is essential to avoiding the negative consequences of climate change outlined in the previous sections. The Waste Framework Directive is an opportunity to drive the transition in the EU towards the Circular Economy by:

- Reducing greenhouse gas emissions tied to the over-production of consumer goods.
- Preventing the generation of waste by reducing the over-production of single-use products.
- Reducing demand for fossil fuel derived plastics by increasing recycling rates of products in circulation.

In a circular economy (CE), the main goal is to maximise the value of products, materials and natural resources, use waste as a resource; and minimise waste generation.⁴⁸ By extending the life of products, those products need to be replaced less often, meaning that greenhouse gas emissions can be avoided. Once the products does eventually breakdown, the materials are sorted and recycled into high-quality recyclate material. Thus, virgin materials are not required to create new products, resulting in further emissions savings. The concept of the Circular Economy is therefore aligned with the aims of the Waste Framework Directive.

⁴⁸ Bressanelli, G., Perona, M., & Sacconi, N. (2019). Challenges in supply chain redesign for the Circular Economy: A literature review and a multiple case study [Article]. *International Journal of Production Research*, 57(23), 7395–7422.

5. EXISTING EU MEASURES TO TACKLE TEXTILE WASTE

In accordance with the waste directive ratified by the EU Parliament in 2018, EU Member States are mandated to implement separate collection systems for textiles by 2025. The recent Commission strategy not only addresses the imperative of managing hazardous chemicals but also underscores the responsibility of producers throughout the entire value chain, extending to the post-consumer stage. This approach involves empowering consumers to make sustainable choices regarding textiles.

Furthermore, the EU has established an EU Ecolabel that allows producers adhering to stringent ecological criteria to affix it to their products. This label ensures a restricted use of harmful substances and contributes to diminished water and air pollution. To address the environmental impact of textile waste, the EU has taken additional measures. Notably, through Horizon 2020 funding, the Resyntex project has been initiated, leveraging chemical recycling techniques, offering a potential circular economy business model for the textile industry.

As an integral component of the Circular Economy Action Plan, the European Commission unveiled a comprehensive strategy in March 2022 aimed at enhancing the durability, reparability, reusability, and recyclability of textiles. This initiative seeks to address the challenges posed by fast fashion, fostering innovation within the sector. The strategy encompasses novel ecodesign standards for textiles, the provision of clearer information, the introduction of a Digital Product Passport, and a call to companies to assume responsibility by minimizing their carbon and environmental footprints.

5.1 Recommendations for the WFD in the Context of Textile Waste

The disposal practices for unwanted clothing have undergone a shift, with a growing tendency to discard items rather than donate them. Currently, less than 50% of used clothing is gathered for potential reuse or recycling, and a mere 1% undergoes recycling to become new clothing. This minimal recycling rate can be attributed to the recent emergence of technologies facilitating the transformation of used clothes into virgin fibres.

The period from 2000 to 2015 witnessed a doubling of clothing production, accompanied by a reduction in the average lifespan of individual clothing items. Notably, Europeans utilise nearly 26 kilograms of textiles annually, discarding

approximately 11 kilograms. While used clothes can be exported beyond the European Union, a substantial majority (87%) is either incinerated or deposited in landfills. This underscores the pressing need for more sustainable approaches to clothing disposal and heightened awareness of the environmental impact of current practices.

While the proposed revisions of the WFD aim to tackle waste management in a more comprehensive manner, there are a number of areas that should have a stronger focus in order to increase the effectiveness of the revised WFD. These areas include product design, collection points, encouraging a societal shift.

5.2 Product Design

Waste is understood to be an action and not a characteristic of an object. As such, to reduce waste is to reduce the act of wasting an object. Product design has a significant impact on waste management and mitigation. Product design with waste production in mind can extend the durability, minimize the desire of consumption, utilize secondary raw materials and biomaterials, and produce in harmony with demand. To encourage product design that reflects the normative goals of the WFD, it should focus on the following aspects of product design.

5.3 Durability

Extending the durability of textiles plays a crucial role in mitigating environmental impact and advancing the principles of the circular economy. In the context of textiles, which often face rapid wear and tear, enhancing product longevity translates directly to a reduction in overall waste generation. By investing in durable materials and construction methods, manufacturers can create products that withstand the test of time, minimizing the frequency of replacements and thereby lowering the quantity of discarded items.

This shift aligns with the circular economy's core tenet of "make, use, and return," as longer-lasting textiles contribute to a more sustainable production-consumption cycle. Additionally, the extended lifespan of textiles reduces the demand for raw materials and energy required for manufacturing, further lessening the environmental footprint. Ultimately, fostering durability in textiles represents a tangible and impactful strategy for promoting sustainability, curbing waste, and embracing the principles of a circular economy.

5.4 Secondary Raw Materials and Biomaterials Becoming the Standard

Embracing the utilization of secondary raw materials and biomaterials in textile product design is imperative for fostering a sustainable and circular economy. By incorporating recycled and repurposed materials into the production process, the environmental impact of textile manufacturing can be significantly reduced. Secondary raw materials, such as recycled fibres and fabrics, divert waste from landfills and minimize the need for virgin resources, thereby mitigating the ecological strain associated with conventional textile production.

Additionally, the integration of biomaterials derived from renewable sources, like organic cotton or biodegradable fibres, not only lessens reliance on non-renewable resources but also promotes a cradle-to-cradle approach where products can be returned to the ecosystem at the end of their life cycle. This shift towards secondary raw materials and biomaterials aligns with the principles of the circular economy, fostering a closed-loop system that maximizes resource efficiency, minimizes waste, and contributes to a more sustainable and environmentally conscious approach to product design in the textile industry.

5.5 Demand-Driven Production

Demand-driven production in the textile industry is crucial for reducing waste and fostering a circular economy. By aligning production with actual consumer demand, manufacturers can minimize the creation of excess stock that often leads to unsold inventory and waste. This approach not only reduces the environmental impact associated with overproduction but also optimizes resources, energy, and materials throughout the supply chain. The textile industry is notorious for its significant environmental footprint, from raw material extraction to manufacturing processes. Embracing demand-driven production helps break this cycle by producing only what is needed, thus minimizing the strain on natural resources.

Additionally, by avoiding the accumulation of excess stock, companies can better manage their inventory, reduce storage costs, and improve overall efficiency. This shift towards demand-driven production is a crucial step in promoting sustainability, mitigating environmental degradation, and moving towards a circular economy where materials are reused, recycled, and regenerated, rather than being discarded after a single use.

5.6 Effective Collection (post-use and at manufacturing stage)

In light of advancing technologies and the imperative to foster a circular economy, ZWAI strongly suggests that the European Commission should include innovative measures in the revised EU Waste Framework Directive. By incorporating sophisticated digital asset tracking systems, we can see that the achievement of exceptionally high rates of product collection at their end of lives becomes possible. This transformative approach will lay the foundation for robust systems of reuse and repair, prioritizing the entire product and its components.

Our recommendation underscores the importance of adhering to stringent recycling standards, ensuring that collected items or materials meet high-quality criteria. This commitment will enable the derived materials to substitute virgin resources in premium applications, promoting a sustainable cycle of reuse and eventual recycling into valuable products. In the fashion industry, a pivotal focus on waste reduction involves the recycling of clothing deemed unfit for reuse. By repurposing such items into secondary materials, we actively contribute to mitigating the environmental impact associated with the production of virgin fibres and textiles.

While it is important that textiles at the end of their use are collected in order to be recycled or reused, the proposed revision of the WFD fails to adequately address textile waste at the manufacturing stage. It is recommended that the revision of the EU's Waste Framework Directive places a heightened emphasis on the collection of textile waste during the manufacturing stage, aligning with the principles of the circular economy and waste reduction.

Textile manufacturing generates a substantial amount of waste, encompassing off-cuts, defective products, and surplus materials, contributing significantly to the overall environmental impact of the industry. By integrating comprehensive measures for the collection and recycling of textile waste at this initial stage of production, the EU can substantially enhance its commitment to a circular economy.

This approach not only reduces the environmental footprint associated with manufacturing but also ensures that valuable resources are reintegrated into the production cycle. Furthermore, addressing textile waste at the manufacturing stage complements efforts aimed at post-consumption waste reduction, creating a holistic framework for sustainable textile practices.

5.7 Cultural Shift / Encouraging Adoption

To successfully transition to a truly circular economy, a substantial cultural shift is imperative for all stakeholders, encompassing citizens, consumers, employers, and employees alike. A key aspect of this shift involves fostering motivation among individuals to actively participate in collection and repair systems, utilising digital tools that facilitate these processes. It is crucial that these systems are not only highly accessible and user-friendly but also supported by appropriate incentives, while simultaneously ensuring that reuse and recycling technologies receive the requisite levels of investment to yield favourable outcomes.

Policy instruments such as the proposed revised Waste Framework Directive should play a pivotal role in promoting, facilitating, and, when necessary, mandating the engagement of manufacturers, suppliers, consumers, and recycling system providers with these circular systems. Recognizing that our current material consumption patterns are deeply entrenched in a convenience-oriented paradigm, it is imperative that policy measures encourage a shift towards a more sustainable approach. Looking ahead to 2040, businesses should increasingly vie for consumer loyalty by offering convenience through efficient access to products, as well as avenues for repair, refurbishment, and recycling, all maintained to high-quality standards.

(The future landscape envisions widespread automation and industrialized robotics supporting these circular services, rendering it convenient for consumers to either hire products or seamlessly return purchased items for repair or reuse. In light of these considerations, the revised Waste Framework Directive should prioritize comprehensive measures that stimulate a holistic shift towards a circular economy, acknowledging the role of both individuals and businesses in realizing a sustainable and resource-efficient future.)

The WFD should encourage a cultural shift in relation to textile waste. To foster a sustainable and circular economy, it is recommended that consumers actively engage with product-life extension services, particularly clothing repair and refurbishment companies. These entities should streamline consumer participation by offering convenient services such as item collection from consumers' homes, repair or refurbishment, and subsequent return of the products. The revision of the WFD should emphasize the integration of consumer-friendly initiatives, encouraging active participation in product life extension services and promoting informed decision-making through accessible information on environmental impact and sustainability.

6. RECOMMENDATIONS TO THE EXISTING ASPECTS OF THE WFD IN THE CONTEXT OF EPR, MATERIAL PRESERVATION POTENTIAL AND TRACEABILITY

6.1 EPR Expansion and Harmonisation

Expand Extended Producer Responsibility (EPR) obligations should be highlighted and enforced to cover a broader range of products, including furniture, mattresses, and floor coverings. The revised Directive should be aimed to ensure consistency in the scope and application of EPR schemes and establish harmonized criteria for fee modulation across all Member States. EPR fees should comprehensively cover end-of-life costs, encouraging responsible product design.

The Commission should also consider including in the Directive a requirement to harmonise reporting and data requirements, aligning them with Digital Product Passports, to create a uniform and efficient EPR framework across the single market.

6.2 Material Preservation Potential in the Recycling Hierarchy

Enhancing the recycling hierarchy by incorporating a more granular approach that considers the varying environmental benefits of different recycling processes could be worth considering. Prioritising 'high' or 'higher' quality recycling over 'lower' or 'low' quality recycling, measured against outcomes rather than specific processes, while also developing a dynamic approach that adapts to technological advancements and changes in net benefits. Introducing a key criterion termed Material Preservation Potential will help to emphasise the ability of a recycling process to yield materials of high quality for repeated recycling without substantial loss of benefits. Incentivise and reward businesses and processes that demonstrate high Material Preservation Potential.

6.3 Clear Definitions, Serialisation, and Traceability

Clearly defining the boundary between waste material and products eligible for reuse, repair, and remanufacturing is important. Facilitating the longer use of products by implementing serialisation, allowing individual items to be easily tracked within the EU for reuse, repair, and remanufacture. Improved definitions, serialisation, and traceability will collectively contribute to a regulatory environment that encourages and facilitates sustainable practices.

7. DISCARDED MATTRESSES; THE WASTE MANAGEMENT HIERARCHY AND THE CIRCULAR ECONOMY

7.1 Overview of the Problem

Mattresses are large and complex products, and are a type of waste which is not specifically mentioned in the proposed WFD. Traditionally, their end-of-life stage has followed the Linear Economy model, leading to excessive amounts of discarded waste in the environment. With most discarded mattresses being landfilled or disposed of directly in natural environments,⁴⁹ the entire industry undermines the integrity of the Waste Management Hierarchy.

A 2021 report by the European Bedding Industry Association (EBIA)⁵⁰ estimated that approximately 360 million mattresses are currently in use within the EU, with approximately 47 million new mattresses sold each year and 42 million discarded annually.

Mattresses are composed of four main materials:

- 1) foam (mainly polyurethane foam);
- 2) springs (steel);
- 3) an outer woven layer “tick”; and,
- 4) a shell enclosing the core (typically Polyester).

Some of the key challenges in delivering a more circular economy for mattresses are:

Limited Reuse: There tends to be limited reuse of mattresses due largely to consumer preference, especially regarding hygiene and sanitation. This market preference directly influences the desire of manufacturers to support and integrate circularity into their operations. However, over 600,000 mattresses are estimated to be reused annually in Britain alone, indicating the market viability of mattress reuse as part of the Circular Economy.

⁴⁹ Community Resources Network Ireland Briefing Paper: Improving Mattress Recycling.

⁵⁰ <https://www.eprclub.eu/events/epr-for-mattresses/>

Limited Ecodesign: Better design requirements mandating for increased durability and the potential for reuse through repair or recovery must be better developed.

Size: The average mattress can weigh anywhere between 17kg and 70kg, with size, materials and even age impacting how much a mattress could weigh. As a result, mattresses are seen as the “poster child” of illegal dumping, leading to significant collection costs.

Design and Infrastructural Issues: In some cases, mattress design hampers dismantling and recycling. Many component materials can be extremely challenging to recycle effectively, and there is a need for more infrastructure to handle this demand. The presence of fire retardants in these materials can further complicate the potential to follow the Waste Management Hierarchy.

7.2. Solutions: EPR Scheme Designs and Suggestions

A 2020 report by Eunomia Research & Consulting Ltd described the results of a global review of mattress EPR schemes for Zero Waste Scotland.⁵¹ In this report, it was found that three main EPR schemes were identified, with industry-led mandatory EPR schemes recognised as the best available technique to combat the issue of discarded mattress disposal, collection, recycling, and reintegration into the Circular Economy.

Industry-led Mandatory EPR Schemes: These schemes were reported as the most widespread for mattress EPR schemes. They are overseen by government agencies or bodies responsible for granting licences for EPR PROs to operate, including terms of reference that can cover. Schemes are underpinned by legal obligations, meaning businesses cannot legally opt out of their obligations or costs and must either self-comply or participate in a compliance scheme. The PROs under these licence agreements can determine the fees and provide incentives for eco-design.

Government-led and Mandatory EPR Schemes: Under this EPR Scheme, the government delivers the PRO-equivalent administration rather than industry. Due to this alternative structure, such a scheme would not have to comply with the EU

⁵¹ How to reduce waste and carbon emissions caused by mattresses: A review of global Extended Producer Responsibility schemes. Prepared by: Eunomia Research & Consulting Ltd for Zero Waste Scotland, July 2020.

Waste Framework Directive on what fees can be charged, as consumers pay the government directly rather than indirectly, as in EPR.

Self-governance EPR Scheme: self-governance is an option in the case of industry-led voluntary mattress schemes, as seen in Australia.⁵² In these schemes, it is voluntary for producers to belong to any PRO, and no legal requirements or regulations apply. There are often collection and recycling targets in place. Although voluntary schemes can be successful, it can take longer than mandatory schemes to achieve recycling goals, especially without concrete targets.

More effective and widespread collection systems are required to preserve the reuse and recycling potential of mattresses. Although many retailers provide take-back schemes, participation rates must be clarified to maintain the integrity of any EPR scheme. Some manufacturers also handle end-of-life mattresses from wholesale activities. The mattress dismantlers also offer dedicated collection services for customers who can request a collection for a fee.

As an interim measure, a landfill ban should be introduced by 2025 to stop direct disposal, facilitating the Circular Economy. As a long-term measure, collection targets should be set as part of an EPR Scheme. In Belgium, the collection target for the % of mattresses discarded, increasing from 30% in 2021 to 80% by 2030. An EPR scheme would cover the costs of collection, screening and storage, and subsidise the cost of take-back schemes by retailers, enabling collection infrastructure to expand and become more accessible to consumers.

Governments can catalyse circularity by implementing EPR schemes, incentivizing sustainability, and establishing robust waste management and resource recovery regulations. They should invest in R&D for innovative resource recovery, waste processing, and closed-loop manufacturing technologies.

The overarching goals are to mitigate environmental and climate impacts, enhance environmental quality, improve public health in line with the waste hierarchy, and reduce the environmental and climate footprints of food systems associated with food waste generation. Preventing food waste would also contribute to food security.

⁵² Community Resources Network Ireland Briefing Paper: Improving Mattress Recycling.

8. ELECTRONIC WASTE, PLANNED OBSOLESCENCE AND THE RIGHT TO REPAIR

8.1. Cryptocurrencies and Electronic Waste

Following the Waste Management Hierarchy, if waste cannot be prevented in the cryptocurrency industry with effective taxation or outright banning, as previously mentioned, a reduction in energy consumption should be targeted to reduce the amount of electronic waste generated by this rapidly growing industry. This can be achieved by mandating proof-of-stake (POS) as the consensus mechanism for processing transactions instead of the proof-of-work (POW) mechanism. Proof-of-stake (POS) uses randomly selected validators to confirm transactions and create new blocks. Proof-of-Work (POW) uses a competitive validation method to confirm transactions and add new blocks to the blockchain.

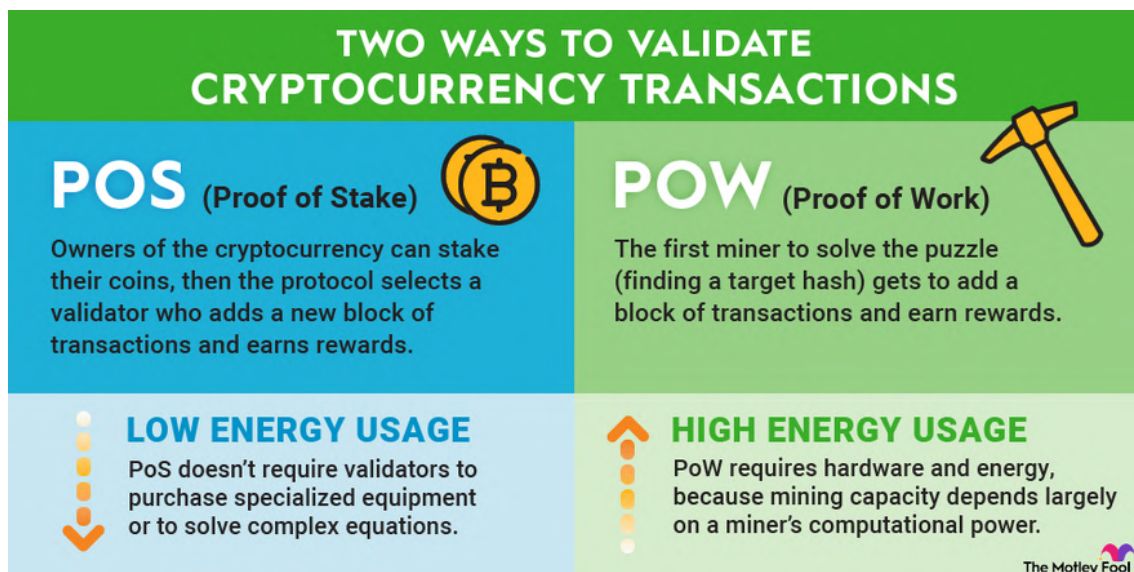


Fig 8.1 Infographic of the two ways to validate cryptocurrency transactions with associated energy usage. Source: <https://www.fool.com/terms/p/proof-of-stake/>

Proof-of-stake is designed to reduce network congestion and address environmental sustainability concerns surrounding the proof-of-work (PoW) protocol. Proof-of-work is a competitive approach to verifying transactions, which naturally encourages people to look for ways to gain an advantage, especially since financial rewards are involved. For example, Bitcoin ‘miners’ earn Bitcoin on the blockchain by verifying transactions, they pay their own operating

expenses, predominantly electricity, with regular Government-issued currency. In this scenario, Bitcoin ‘miners’ exchange energy for cryptocurrency, which causes PoW mining to use as much energy as some small countries. For example, in 2022, the global mining of Bitcoin resulted in 102.49 TWh of electricity consumption. Using the national grid intensity in Ireland of 345 gCO₂/KWh of electricity, this equates to 35.19 TWh of electricity consumption: approximately 90% of Ireland’s total CO₂e emissions.



Fig 8.2 Total Bitcoin electricity consumption 2019 to 2023 Year To Date.
Source: <https://ccaf.io/cbnsi/cbeci>

The PoS mechanism seeks to solve these problems by effectively substituting staking for computational power, whereby the network randomises an individual's mining ability. This means there should be a drastic reduction in energy consumption since miners can no longer rely on massive farms of single-purpose hardware to gain an advantage. Reduced electricity consumption can elongate the useful lifetime of first-generation electronic devices before they must be reintegrated into society via the Waste Management Hierarchy; thus, every effort should be made to reduce energy consumption.

A recent example of this in action is that of Ethereum, the world’s second most popular cryptocurrency in terms of market capitalisation. On 15 September 2022, the Ethereum network adopted a proof-of-stake (PoS) consensus mechanism,

where a study found that the transition to PoS had reduced energy consumption by 99.98%. This should act as a compelling best available technique on which the future of cryptocurrency transaction verification.

8.2. Unnecessary Obsolescence

Mandatory software support periods should be mandated in the EU to address the issue of early obsolescence of electronic devices. This would include ensuring devices receive updates and new operating system updates for a defined and elongated period of time after release. Mandatory software support should include reference to a minimum duration of support and compatibility with new and/or updated applications (the importance of which can be seen in essential lifestyle applications such as banking and utilities, which, when they fail to perform on older electronic devices, can lead to unnecessary consumption of new devices); and security updates, which is crucial for addressing vulnerabilities in electronic devices and protecting users from security threats, which aligns with GDPR legislation.

An example of mandatory software support periods in a Member State occurs in France. In 2020, French President Emmanuel Macron signed into law “*Law No. 2020-105 Regarding a Circular Economy and the Fight Against Waste*”. To fight against the practice of planned obsolescence, certain electronic devices must display a “*reparability rating*” starting in 2021, and a “*durability rating*” starting in 2024. Additionally, starting in 2021, computer and cellphone manufacturers must inform buyers of the time frame during which their devices are subject to operating software updates. The revised Waste Framework Directive should mandate for all Member States to implement a similar national policy.

9. CONSTRUCTION AND DEMOLITION WASTE

As discussed in our previous submission, construction & demolition (C&D) waste is Europe’s largest waste stream based on volume. The submission outlined the challenges of recycling and reuse of this type of waste. The EU’s C&D waste management protocol adopted in 2018 aimed to increase preparation for reuse and recycling within the sector; however, it has not succeeded in doing so for more than a minor proportion of C&D waste produced.

Therefore, omitting this waste stream from the revised Waste Framework Directive we see as a missed opportunity to tackle Europe’s largest waste stream. As mentioned in our previous submission, the built environment accounts for almost 50% of Europe’s raw materials consumption.

C&D waste commonly includes materials such as concrete, bricks, wood, glass, metals and plastic, which have a high resource value. Additionally, if C&D waste is not separated at source, it can potentially contain hazardous materials that impede recycling. Linking with the previous section, the economic benefits of implementing a circular economy approach in this sector could, therefore, be significant.

Again, we stand by our recommendation to replace the word '*demolition*' (which suggests that the discarded materials resulting from the demolition of a structure are waste), with '*deconstruction*', a term which indicates that when a building or structure cannot be reused or repurposed, it will be deconstructed so that its components can be reused or recycled.

This sector must be prioritised when it comes to our transition to a circular economy.

It is our submission that the revised Waste Framework Directive must include a mandatory requirement that the construction industry must fully adopt the principle of extended producer responsibility.

10. CIRCULAR ECONOMY AND RECYCLING TARGETS

In our previous submission, we stressed the importance of including the economic potential of a circular economy model for (municipal) waste in the revised Waste Framework Directive. The revised document mentions the circular economy as a main driver of increasing material recovery and improving the quality of secondary raw materials. The European Commission has also funded research in the field of circular economy, specifically related to textiles, under their H2020 programme.

However, the proposed revision of the Waste Framework Directive mainly focuses on the food and textile industries and highlights the economic benefits of implementing a circular economy model for these sectors. These benefits include overall returns on recycling investment, and overall value added for the EU economy and savings in household food expenditure that come with a reduction in food waste. While we acknowledge that these are two problem industries when it comes to their overall environmental impact and that of their waste, it is important to highlight the economic benefits of implementing a circular economy for all sectors.

A recent report by the European Environment Agency (EEA), shows that a significant number of European Union member states are at risk of missing either one or more of the recycling targets set for 2025. As mentioned in the same

report, higher recycling rates will allow Europe to reuse more material resources, which are 'much-needed' for our economy. While national and EU-driven policies have improved recycling rates for municipal waste since 2010, the EEA reports that progress has slowed.

This, combined with the above point regarding many countries being at risk of not reaching recycling targets, means that it is time for Member States to take their efforts towards adopting a circular economy model further. As mentioned previously, highlighting the specific economic benefits of the circular economy for each sector could incentivise not only EU member states but also the institutions and companies in the countries that are operating within these sectors to increase their reuse and recycling efforts. Additionally, recycling targets could be set for waste streams other than municipal- and packaging waste.

It is therefore our submission that the proposed revision of the waste framework directive should include how much stronger requirement for Member States to reach recycling targets, with appropriate penalties for states which do not reach these targets; while, at the same time, appropriate and sentence should be provided to encourage attainment of the relevant targets.

11. CONCLUSION

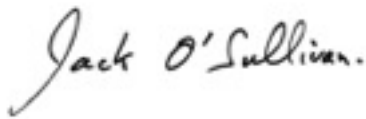
Zero Waste Alliance Ireland has examined carefully the Commission's proposed targeted revision of the Waste Framework Directive; and, while there are many useful and environmentally beneficial improvements proposed, the draft Directive still lacks a number of important features. The proposal is narrowed to include only two types of waste: textile waste and food waste, and even these are considered in a way which does not include the entire operations and activities which lead to the generation of wastes as a result of food production, and textile production, from raw materials to final disposal.

In our submission, we suggest a number of changes which we hope the Commission would be willing to accept, even though the draft directive is already at the adoption stage. Such changes should include, as a minimum:

- ✓ Extended producer responsibility;
- ✓ Recognition that the current system of extraction, transport, raw material production, processing and disposal has serious widespread effects on the Earth's climate;

- ✓ Much tighter controls on the export of waste from one member state to another and from the EU to other countries;
- ✓ Stronger penalties for failure to reach waste production and recycling targets; and,
- ✓ Inclusion of construction and demolition waste in the revised directive.

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Zero Waste Alliance Ireland

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