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Executive Summary

Now is the time to build an effective EU policy framework for managing materials – one that will accelerate Europe’s transition to a circular economy, support a strong industrial strategy, and make it easier to do business in Europe.

We need to do more – in terms of both scale and speed – to change the way we manage materials.

The extraction, manufacture, transport, use, and disposal of materials are contributing heavily to the triple planetary crisis: climate change, nature and biodiversity loss, and pollution and waste. Globally, material use is responsible for over 55% of greenhouse gas emissions and 90% of land-based biodiversity loss and water stress.^{1,2}

By 2040, the combination of existing and currently planned policies, such as the Fit for 55 package, will have cut EU emissions to 60% below 1990 levels. However, according to the European Scientific Advisory Board, by 2040 emissions must fall by 90–95% below those levels to limit global warming to 1.5°C and reach climate neutrality by 2050, and the EU’s cumulative emissions for 2030–50 must keep to a strict carbon budget.³

The proposed regulatory framework can help shrink emissions from material use, so we avoid wiping out our carbon budget while we work towards net zero. It can help us move from an inefficient, material-hungry, linear economy to a circular one that extracts fewer virgin resources, keeps products and materials in use for as long as possible, and maintains their value at end of life.

This report sets out the components of a regulatory framework that will:

- **Harness the power of the Single Market** and sustain its unity, enabling a fair and competitive system for all: business, industry, and consumers.
- **Minimise administrative burdens** for businesses operating in the EU.
- **Support a fit-for-the-future industrial strategy** that keeps Europe internationally competitive.
- **Safeguard the bloc’s material security** in the face of geopolitical uncertainties and price volatility.
- **Consolidate Europe’s global leadership** in circular economy and digital product policy.

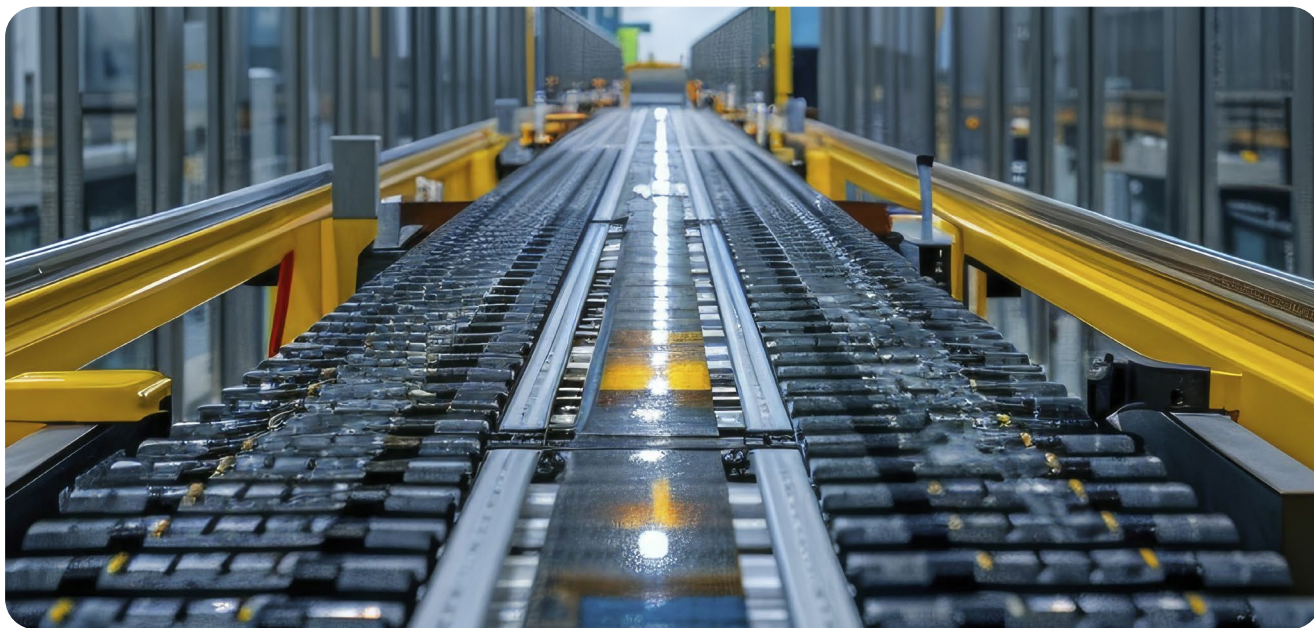
¹ United Nations Environment Programme (2024) Global Resources Outlook 2024: Bend the Trend – Pathways to a liveable planet as resource use spikes. International Resource Panel. Nairobi. Available at <https://www.resourcepanel.org/reports/global-resources-outlook>

² European Scientific Advisory Board on Climate Change (2023) Scientific advice for the determination of an EU wide 2040 climate target and a greenhouse gas budget for 2030–2050, 15th June 2023, available at <https://climate-advisory-board.europa.eu/reports-and-publications/scientific-advice-for-the-determination-of-an-eu-wide-2040>

³ European Environment Agency 2023 Trends and projections in Europe 2023. EEA Report 07/2023, p 21. Available at <https://www.eea.europa.eu/publications/trends-and-projections-in-europe-2023>

The measures proposed in this report support many of the actions called for in the recent Antwerp Declaration for a European Industrial Deal, such as eliminating regulatory incoherence and reducing over reporting.⁴ EU action is key to driving change at pace and scale – an EU-level framework can deliver much more, faster and more efficiently than if Member States act alone.^{5,6}

Together, the proposed measures map our path to a thriving, low-carbon material economy.



Building blocks for a materials policy framework

To create a strong, holistic policy framework for managing materials, we propose extending the scope of some current policies and building upon them with new ones. These building blocks are as follows.

Decarbonising material production – The EU Emissions Trading Scheme (EU ETS) and Carbon Border Adjustment Mechanism (CBAM) are effective measures for reducing greenhouse gas emissions from the production of materials. Extending the scope of the EU ETS, and extending CBAM coverage to align with it, will help cost-effectively decarbonise materials production and ideally stimulate the creation of similar carbon-pricing schemes across the globe.

⁴ The Antwerp Declaration for a European Industrial Deal, 20 February 2024, available at <https://antwerp-declaration.eu/>

⁵ Austria's circular economy strategy aims to shrink its material footprint by 80% by 2050. See Federal Ministry Republic of Austria Climate Action, Environment, Energy, Mobility, Innovation, and Technology 2022 Austria on the path to a sustainable and circular society: The Austrian Circular Economy Strategy. Available at: https://circulareconomy.europa.eu/platform/sites/default/files/2023-10/Austrian_CES.pdf

⁶ The Netherlands has proposed detailed measures to achieve its ambition of reducing the use of primary abiotic raw materials by 50% by 2030. See Government of the Netherlands (2023) National Circular Economy Programme 2023 – 2030, available at <https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/beleidsnotas/2023/02/03/nationaal-programma-circulaire-economie-2023-2030/NPCE+Circulaire+Economie+rapport+Engels.pdf>

Product policy – A more sustainable form of consumption – with fewer, better designed, longer lasting products that are highly used, repairable, reusable, and ultimately recyclable – can be achieved through a combination of policy measures. Harmonisation is key to leveraging the power of the Single Market to drive change.

By harmonising, strengthening, and integrating policy mechanisms in the following areas, Europe can create a product policy framework that boosts business and benefits consumers. The key components are:



The Ecodesign for Sustainable Products Regulation (ESPR) Digital Product Passports can play a key role in efficiently managing data in order to reduce the reporting burden and enable integration with EPR and product taxation – empowering consumers to make sustainable choices and supporting businesses to decarbonise supply chains. This is also an opportunity for Europe to lead the unfolding digital product revolution.



Extended Producer Responsibility (EPR) Reduce red tape in the Single Market by harmonising elements of EPR scheme design across all Member States – the products in scope, definitions of obligated producer, reporting requirements, and the criteria for modulating fees – and use information held on DPPs and accurate sales data to streamline reporting. Expanding the scope of costs covered will better reflect the polluter pays principle, transferring costs from taxpayers to producers and levelling the playing field between producers inside and outside the EU.



Product taxation Targeted, harmonised product taxation levied at EU-level will help establish price signals that incentivise producers to offer more resource-efficient, sustainable products and encourage consumers to choose them. Taxation could be deployed strategically to promote circularity – for example, it might align with products' ESPR scores or, in the case of vehicles, relate to weight. This approach would require changing how the Commission exercises its competence over taxation, to qualified majority voting. This is a change worth making to build a more effective EU policy toolbox.



Green public procurement With spending power of around €2 trillion (14% of GDP) per year, the public sector has enormous potential to shape the market and catalyse systemic change. This can be used strategically, in combination with the measures above, to foster successful circular business models, encourage investment, and give the market long-term confidence in demand for material-efficient products and services.



Repair and reuse A mix of measures could help make large-scale repair and reuse systems the norm: creating minimum standards and reporting requirements; exempting them from anti-trust laws that prevent multiple businesses from participating; and setting non-binding carbon budgets for specific sectors. This will create opportunities for new business models and mean products stay in use much longer.



The product-waste boundary Harmonising the definition of when specific products become waste will give clarity to EU businesses involved in repair and refurbishment and encourage them to innovate. This will also ease the movement of refurbished and repaired products within the Single Market.

Changes in how Europe thinks about and delivers the Waste Framework Directive would support the measures outlined above.

Re-thinking the Waste Hierarchy – To better mitigate climate change and reduce material consumption, a redefined Waste Hierarchy would focus solely on materials at the point when they become waste. It should be nuanced to include recycling and residual waste hierarchies for dry materials (with recycling processes ranked by their avoided emissions) and include a separate biowaste treatment hierarchy.

A new Materials Framework Directive – The Waste Framework Directive has transformed how Europe thinks about managing waste, but it is no longer enough to meet our decarbonisation challenge. We need a Materials Framework Directive to help manage resources – including waste – through the lens of resource efficiency and circularity. This will create a legislative space for policy that drives decarbonisation through the choices we make about which materials we use and how and when we use them.

It will focus on reducing material consumption through material taxation at EU level. It will also place a duty on Member States to use a materials application hierarchy to guide the use of the right material in the right application and thus reduce material use and environmental impacts.

The political challenge and opportunity

A low-carbon material economy is within our reach. It is not only essential for tackling climate change – it will also enable Europe's continued prosperity while reducing our demands on the natural world.

Transforming the economy to a circular model requires EU-level vision and action to leverage the strength of the internal market and offer harmonised rules and incentives that harness the ingenuity and drive of its actors.

The benefits will cascade to society: boosting employment, expanding resource productivity, slashing expenditure by extending product lifetimes, reducing maintenance costs, and avoiding external costs like pollution.

A policy framework that realigns our relationship with materials can help build a sustainable future for Europe's citizens, now and in the generations to come. Much is at stake, but if the EU can find the means to make these changes and influence the world to do the same, the rewards will be greater still.

The case for a circular economy

A circular economy can be an enterprise economy, one with valuable opportunities and incentives for commerce. But it needs an effective regulatory environment to thrive – and give business the confidence to invest in new models that break the link between material consumption and prosperity.

Many of the legislative building blocks are in place or emerging, but more needs to be done.

This will need political vision and leadership: to make the transition successful and deliver prosperity, leveraging the power of the internal market is essential. This will mean Member States agreeing to transfer more decision-making powers to the EU level. It will involve the wider use of economic instruments such as taxation to drive the changes we need – measures that need to be sold to electorates in new ways if they are to be politically viable.

In this paper we outline a regulatory framework that we believe will enable Europe to transition successfully to a low-carbon material economy. Much is at stake but, working together, the EU can lead the world in realigning our relationship with materials – a vital but widely misunderstood component of tackling the global challenges we face.

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1.1 The environmental imperative

The science is clear: now is the time to accelerate the shift to a circular economy.

Globally, the extraction and processing of material resources account for over 55% of greenhouse gas emissions – more than 60% if land use impacts are considered.¹ While the energy transition – itself a highly resource-intensive process in the short term – is vital to reducing emissions, it is arguably the easy part as much of the effort is focused on supply side (energy production).

We need a much stronger focus on demand-side (consumption) measures, as UNEP's recently published Global Resources Outlook 2024 makes clear. This reality has still to be grasped at the EU level, as evident from PPWR targets for the 2030s and 2040s that are nowhere near what is required to limit global warming to 1.5°C.

In June 2023, based on rigorous analysis that considered both fairness and feasibility, the European Scientific Advisory Board (ESAB) recommended two new targets to limit warming to 1.5°C and reach climate neutrality by 2050:² reducing greenhouse gas emissions by 90–95% by 2040 (relative to 1990 levels) and keeping the EU's cumulative emissions for 2030–2050 to a strict carbon budget.³

The EU is already one-third of the way (31%) towards its emissions reduction target, especially in the energy supply sectors and energy-intensive industries. By 2040, the combination of existing and currently planned policies, such as the Fit for 55 package, will have cut emissions to another third (60%) below 1990 levels.⁴

While a significant reduction, this would still fall far short of the ESAB targets mandated under the European Climate Law and consistent with the 2015 Paris Agreement. 2023 saw a global mean temperature of just under 1.5°C above the 1850–1900 average, with floods, heatwaves, and droughts affecting Europe and other parts of the world.⁵ We need to work at speed and scale to limit heating and build a sustainable future for the present population and the generations to come.

¹ United Nations Environment Programme (2024) Global Resources Outlook 2024: Bend the Trend – Pathways to a liveable planet as resource use spikes. International Resource Panel. Nairobi. Available at <https://www.resourcepanel.org/reports/global-resources-outlook>

² European Scientific Advisory Board on Climate Change (2023) Scientific advice for the determination of an EU wide 2040 climate target and a greenhouse gas budget for 2030–2050, 15th June 2023, available at <https://climate-advisory-board.europa.eu/reports-and-publications/scientific-advice-for-the-determination-of-an-eu-wide-2040>

³ The ESAB report recommends limiting cumulative greenhouse gas emissions to 11–14 Gt CO₂e between 2030 and 2050, an average of 0.55–0.7 Gt per year. For comparison, EU emissions in 2021 were 3.6 Gt; at that level, cumulative emissions over the 2030–50 period would amount to 72 Gt.

⁴ European Environment Agency 2023 Trends and projects in Europe 2023. EEA Report 07/2023, p 21. Available at <https://www.eea.europa.eu/publications/trends-and-projections-in-europe-2023>

⁵ Copernicus Climate Change Service (2024) Copernicus: 2023 is the hottest year on record, with global temperatures close to the 1.5°C limit, 9th January 2024. Available at <https://climate.copernicus.eu/copernicus-2023-hottest-year-record>

The materials we consume and the ways we make and manage them will heavily influence the outcome: in addition to contributing more than half of greenhouse gas emissions, the extraction, manufacture, transport, use, and disposal of materials are responsible for 90% of land-based biodiversity loss and water stress^{6,7,8} While public and political discourse on greenhouse gas emissions typically neglects this crucial aspect, our material use contributes significantly to the triple planetary crisis – climate change, nature and biodiversity loss, and pollution and waste.⁹

Early action to reduce material consumption is crucial.

In the context of a carbon budget based on cumulative emissions, it will lessen the scale of the overall challenge of decarbonisation – and it is vital that we avoid wiping out our carbon budget while we work towards net zero. This means moving rapidly from an inefficient, material-hungry, linear economy to a circular one that involves much less raw material extraction, keeps products and materials in use for as long as possible, and maintains their useful value at the end of life.

⁶ Hertwich, E G 2021 'Increased carbon footprint of materials production driven by rise in investments, Nature Geoscience, vol 14 (March 2021): 151-55. Available at <https://doi.org/10.1038/s41561-021-00690-8>.

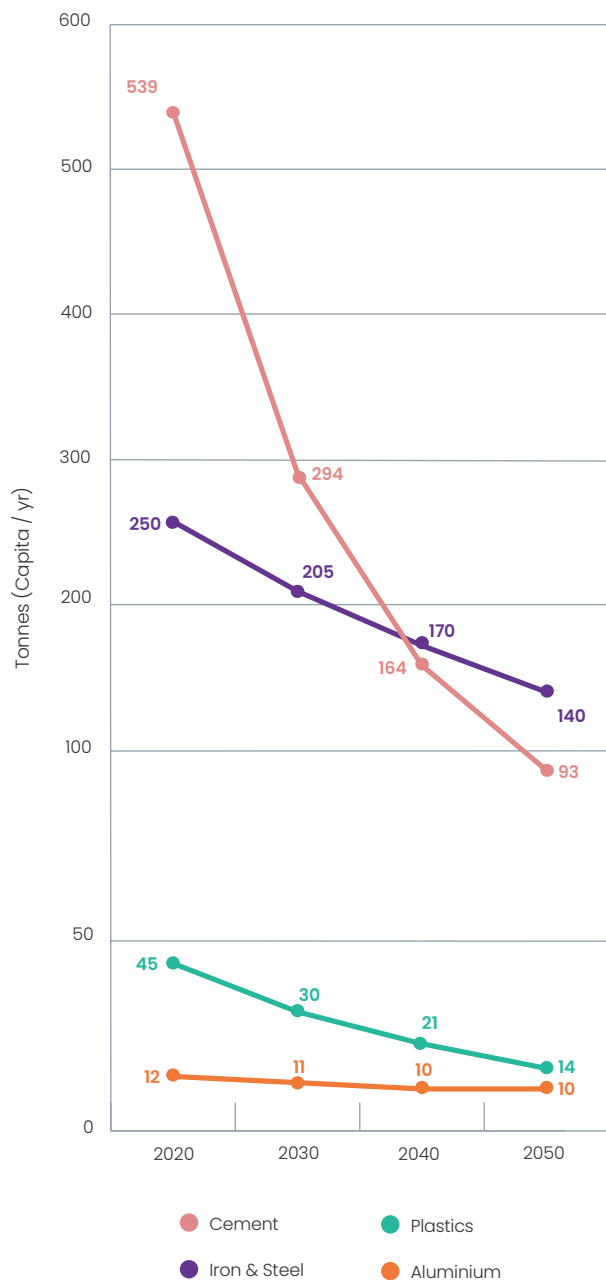
⁷ UNEP International Resource Panel (2020) Resource Efficiency and Climate Change: Material Efficiency Strategies for a Low-Carbon Future. Available at <https://www.resourcepanel.org/reports/resource-efficiency-and-climate-change>

⁸ United Nations Environment Programme (2024) Global Resources Outlook 2024: Bend the Trend – Pathways to a liveable planet as resource use spikes. International Resource Panel. Nairobi. Available at <https://www.resourcepanel.org/reports/global-resources-outlook>

⁹ UNEP (2020) The triple planetary crisis: Forging a new relationship between people and the earth. Statement prepared for delivery to the Sub-Committee, Committee of Permanent Representatives by H E Fernando Coimbra, Chair of the Committee of Permanent Representatives. Available at <https://www.unep.org/news-and-stories/speech/triple-planetary-crisis-forging-new-relationship-between-people-and-earth>

Figure 1: Reducing consumption of high-emitting materials to meet our 1.5°C carbon budget

The scale of emissions reduction needed by 2040 varies according to sector. For four high-emitting materials – cement, iron and steel, plastics, and aluminium – per capita global consumption must drop by around 70%, 32%, 54%, and 17% respectively, according to a recent study.¹



1.2 The economic opportunity

A swift and comprehensive transition to a circular economy should be at the heart of a rational industrial strategy for the EU.

We are poor in natural resources but rich in innovation and purchasing power, and we have a unique ability to regulate cooperatively. Leading the world in dematerialising the economy mitigates our limitations and plays to our strengths. These systemic changes will require a sophisticated approach to regulation at scale – and arguably only the EU is capable of this.

In the face of tangible environmental change, some Member States are already taking action to reduce material consumption and move more rapidly towards a circular economy. For example, Austria's circular economy strategy aims to shrink its material footprint by 80% by 2050, while The Netherlands has proposed a detailed set of measures to achieve its stated ambition of a 50% reduction in the use of primary abiotic raw materials by 2030.^{10,11}

While these individual efforts seem positive, at best they will be less efficient and effective than co-ordinated supranational action. At worst, they risk further fragmenting the internal market by creating potential barriers through incoherent regulatory approaches.¹² There is another option, however.



¹⁰ Federal Ministry Republic of Austria Climate Action, Environment, Energy, Mobility, Innovation, and Technology 2022 Austria on the path to a sustainable and circular society: The Austrian Circular Economy Strategy. Available at: https://circulareconomy.europa.eu/platform/sites/default/files/2023-10/Austrian_CES.pdf

¹¹ Government of the Netherlands (2023) National Circular Economy Programme 2023 – 2030, available at <https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/beleidsnotas/2023/02/03/nationaal-programma-circulaire-economie-2023-2030/NPCE+Circulaire+Economie+rapport+Engels.pdf>

¹² For example, the National Circular Economy Programme for the Netherlands includes a proposal to distinguish between high-grade and low-grade recycling and include this in the minimum standards – an approach which would likely differ from that applied in other Member States. See Government of the Netherlands (2023) National Circular Economy Programme 2023–2030, available at <https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/beleidsnotas/2023/02/03/nationaal-programma-circulaire-economie-2023-2030/NPCE+Circulaire+Economie+rapport+Engels.pdf>

¹³ 2023 State of the Union Address by President von der Leyen. Available at https://ec.europa.eu/commission/presscorner/detail/en/speech_23_4426

An integrated EU policy response to the challenge of managing materials will harness the power of the Single Market and sustain its unity. It will support Europe’s industrial competitiveness, make it easier to do business here, and bring about a more rapid and comprehensive transformation.^{13,14}

Indeed, our proposed measures address many of the actions called for in the recent Antwerp Declaration for a European Industrial Deal, such as eliminating regulatory incoherence and reducing over reporting.¹⁵

A truly circular economy, enabled by a coherent regulatory framework, will go beyond responsibly managing waste. It will also mean implementing policies to maintain, manage, and enhance Europe’s buildings and infrastructure and its access to materials and products.

A circular economy – and the technology that enables it – will help safeguard the bloc’s material security and resilience to external shocks. And it has good potential to boost employment, expand resource productivity, and slash expenditure by extending product lifetimes, reducing maintenance costs, and avoiding external costs like pollution.¹⁶



¹⁴ Financial Times (2023) The EU’s plan to regain its competitive edge, 5 November 2023, available at <https://www.ft.com/content/124b4cdb-deb9-49a0-b28d-d97838606661>

¹⁵ The Antwerp Declaration for a European Industrial Deal, 20 February 2024, available at <https://antwerp-declaration.eu/>

¹⁶ Ellen Macarthur Foundation (2023) Growth Within: A Circular Economy Vision for a Competitive Europe, available at <https://ellenmacarthurfoundation.org/growthwithin-a-circular-economy-vision-for-a-competitive-europe>



1.3 Towards a regulatory framework for a low-carbon material economy

Eunomia has been working on EU resource and waste policy for over two decades. While action at the EU level has delivered much in that time, looking ahead, the scale and pace of change required are without precedent. The targeted revision of the Waste Framework Directive focuses on only a few elements and will leave many important questions unresolved; it will not lay the foundation for the transformation Europe needs.¹⁷

While several important components are either in place or proposed, no coherent, overarching vision yet exists for materials management at the EU level in the context of the climate challenge. In this paper we seek to fill that gap. We build on what is already in place or underway, make connections between policy mechanisms where relevant, and present a number of more innovative, novel approaches for different areas.

We draw on our experience, including extensive engagement with stakeholders over the years, to offer up a framework for effectively managing the rapid transition to a low-carbon material economy in a way that ensures European prosperity while significantly reducing environmental impacts. This framework will also serve as a template that the rest of the world can follow. Posing as many questions as it answers, this paper is intended to make a meaningful contribution to a very important debate that affects all of our futures.

¹⁷ The narrow scope of the revision prompted this study

1.4 Underpinning principles

Certain principles inform and underpin our recommendations:

Leveraging the power of the Single Market. Key to Europe's competitiveness and prosperity, a well-functioning Single Market is essential for harnessing the dynamism of business to address the challenge of moving rapidly, and at scale, to a low-carbon material economy.¹⁸

Minimising administrative burden for business through harmonisation. Moving away from the inconsistent transposition of EU law, which can lead to market fragmentation and inefficiencies, towards a greater focus on providing clarity and consistency across Member States, contributing to President Von der Leyen's aim to reduce reporting obligations by 25%.¹⁹

Engaging the digital transition. Ensuring that data and technology are at the heart of the transformation to help drive change efficiently and minimise administrative burdens.

Levelling the playing field. Avoiding European companies being undercut by those based in third countries who sell on to the EU market.

Maximising the use of economic instruments. An essential component of stimulating innovation by providing price signals to the market and giving clear and consistent incentives at scale, while providing businesses with flexibility in how they respond. Widely supported in principle, but under-employed in practice.

Securing popular support for the broad framework of measures. This is particularly important in the context of the current political reality, where both at Member State and EU level there has been push-back against the Commission's green agenda. The public broadly support climate action, but more consensus is needed in support of specific measures.

Expanding the EU's influence on global policy for managing materials and reducing greenhouse gas emissions.²⁰ This includes direct sway, through measures that require companies outside the EU to comply with EU laws if they want to trade with or operate in the bloc. It also encompasses indirect encouragement – for example, by proactively providing guidance and capacity building on how to set innovative circular economy policy; demonstrating the benefits for the economy, society, and environment; and providing a template for action outside the EU. Maximising the so-called Brussels effect will enhance the EU's role as a regulatory superpower and its global leadership in climate action.

¹⁸ See for example Business Europe (2023) Message to European political parties ahead of 2024 EP elections, available at https://www.busseurope.eu/sites/buseur/files/media/reports_and_studies/2023-11-07_message_to_eu_political_parties_ahead_of_ep_elections_nov_2023_final_0.pdf

¹⁹ European Commission (2023) 2023 State of the Union Address by President von der Leyen, 13 September 2023, available at https://ec.europa.eu/commission/presscorner/detail/en/speech_23_4426

²⁰ In line with the ambition set out in the Circular Economy Action Plan, available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN>

1.5 A framework for building a prosperous, sustainable future for all

To work effectively, the framework should **strike the right balance** between the roles of government, business, and the public.

It should **leverage the power of the EU's internal market**, along with data and technology, to transform how we use resources.

It should **enable a competitive and efficient market** to move swiftly towards circular models, working in tandem with the energy revolution to ensure we can all continue to prosper.

It should also **be workable and adaptable internationally**, fostering low-carbon circular economies in other countries for better global climate health.

The most politically challenging – but arguably the most important – of the proposed measures is the **greater application of environmental taxation at the EU level**. This combines two distinct aspects that already inspire passionate arguments:

1. Further centralisation of decision-making at the EU level at a time when the EU's regulatory reach is being questioned, most notably by those on the political right; and
2. Taxation – where any suggestion of further taxation is often furiously resisted, even if there might be countervailing measures to (for example) ensure revenue neutrality or assist the poorest in society.

To overcome these challenges, this important shift to a truly circular economy will need creative approaches that obviously and directly benefit the majority of citizens. In other words, the shift overall **must have broad popular appeal**.

The political challenge is thus to successfully emphasise in clear terms that:

- pricing in more of the environmental costs associated with materials and products is essential to send the right signals to the market; and
- fiscal measures such as taxation can do this effectively and decisively.

At the same time, in order to build up the political support that has so far been missing, there will need to be:

- a case made to citizens for redistribution or other measures to secure popular appeal; and/or
- an extensive process to build cross-party consensus, depoliticise this issue, and build support among political parties from greens to traditional conservatives, liberals, and the left.

In the following three sections, we outline how the following fit within the overall framework:

- Decarbonising materials production
- Product policy for a low-carbon economy
- Maintaining material value at end of life

Our proposals in all three areas largely build on existing EU action – by expanding, linking, and amending current approaches to strengthen their effectiveness on the whole. A key theme is providing greater clarity and simplification for business through harmonisation across the EU, accompanied by a transfer of decision-making competences in certain areas away from individual Member States to the EU level.

We then present our proposal for transforming the Waste Framework Directive into a Materials Framework Directive, with additional policy measures that will complete the toolkit for effectively and efficiently managing the transition to a low-carbon material economy.



Decarbonising Materials Production

In the EU Emissions Trading Scheme (EU ETS) and the Carbon Border Adjustment Mechanism (CBAM), Europe has strong, over-arching measures to reduce greenhouse gas emissions from the production of materials.

A theoretically efficient and effective economic instrument, for most years of its existence the EU ETS has been hobbled by the issuing of free allowances to avoid carbon leakage. However, the introduction of the CBAM provides a mechanism to strengthen the overall effectiveness by levelling the playing field between domestic and imported goods.

Rapidly extending CBAM coverage to match the scope of the EU ETS, and indeed continuing to expand the sectoral scope of the latter while also expanding the CBAM to ensure alignment, will provide a sound underpinning for cost-effectively decarbonising materials production. Moreover, depending on the way in which third countries respond, the CBAM could stimulate the establishment of similar carbon-pricing schemes across the globe.





2.1 The EU Emissions Trading System

The EU ETS has been working since 2005 to cut greenhouse gas emissions from European industrial installations, while giving different sectors some flexibility in how to achieve this. It currently covers about 40% of Europe's emissions. These arise from power stations, oil refineries, and plants producing steel, iron, and other metals; cement, lime, glass, and ceramics; bulk organic chemicals and acids; and cardboard, paper, and pulp. These are all materials that go on to fertilise crops or form buildings, infrastructure, transport, packaging, and other products essential for everyday life. Emissions from maritime transport and flights within the European Economic Area and to Switzerland and the UK also fall within its scope.

The EU ETS caps allowable emissions. Operating under this cap, EU-based companies have to purchase emissions allowances, with some free allowances currently distributed to discourage them from shifting production abroad (so-called carbon leakage).²¹ Allowances are tradable and hence the price of allowances adjusts in response to supply and demand. As part of the Fit for 55 reforms, an emissions target has been set for EU ETS sectors of 62% below 2005 levels by 2030, a significant increase from the previous 43% target. To achieve this, the annual reduction in the cap has been raised from 2.2% to 4.3% for 2024-2027 and to 4.4% for 2028-2030.²²

²¹ European Commission 'Carbon leakage'. Web page available at https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/free-allocation/carbon-leakage_en

²² European Parliament (2022) Press release: Climate change: Deal on a more ambitious Emissions Trading System (ETS), 18.12.2022, available at <https://www.europarl.europa.eu/news/en/press-room/20221212IPR64527/climate-change-deal-on-a-more-ambitious-emissions-trading-system-ets>

2.2 The Carbon Border Adjustment Mechanism

The CBAM, as part of the Fit for 55 legislative package, is being introduced to start levelling the commercial playing field for EU producers and tackle the growing problem of greenhouse gas emissions embodied in imports.²³ It will ensure importers of some key materials and a few finished products (for example, screws, bolts, and rivets) pay an equivalent price for the emissions from their production as domestic producers. This will be phased in from 2026 to 2034, with free allowances phased out over the same period.

As well as addressing the risk of carbon leakage, it should push global industrial emitters to decarbonise. The CBAM initially covers direct emissions from the iron and steel, cement, aluminium, fertiliser, hydrogen and electricity sectors – but not bulk chemicals or plastics – and also, after a transition period, indirect emissions indirect emissions from electricity and heat for cement and fertilisers.²⁴ Indirect emissions for other sectors, organic chemicals, polymers, and consumer goods may be added later.²⁵

The CBAM will thus offer a financial incentive for low-carbon producers outside the EU, who will pay less for the goods they import to the bloc. More broadly, the CBAM may well incentivise governments in third countries to establish equivalent emissions trading schemes, so that revenues from domestic producers flow to their own exchequers rather than to the EU.

However, the current scope remains limited and, with downstream finished products almost entirely excluded at present, importers of finished goods will effectively bypass the CBAM.²⁶

The establishment of equivalent emissions trading schemes in third countries would be a best-case outcome: it would mean that any finished products manufactured there and then imported to the EU would already have paid the equivalent carbon price. This is not a far-fetched notion. As *The Economist* recently noted, “The rest of the world is beginning to look more European – with carbon prices spreading in countries both rich and poor”.²⁷

²³ European Commission 2023 ‘Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism’, Official Journal of the European Union L 130/52, 16.5.2023. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L.2023:130:FULL>

²⁴ Scope 1 emissions are released directly from a business through its operations, from assets it owns or controls; Scope 2 emissions are created in the generation of energy that a business purchases and uses; Scope 3 emissions cover all other indirect emissions, such as a business’s travel or emissions from actors in its supply chain.

²⁵ Including plastics (alongside organic chemicals, hydrogen, and ammonia) was, however, considered in the discussions leading up to the adoption of CBAM. While plastics may be brought under CBAM at a later date, there is currently no scheduled plan for this.

²⁶ Financial Times 2023 ‘UK exporters face hefty EU carbon tax bill after Sunak weakens climate policies’, 1 October 2023. Available at <https://www.ft.com/content/53e91a0b-3290-4eb8-944d-19b9ee915ba0>

²⁷ *The Economist* 2023 ‘How carbon prices are taking over the world’, 1 October 2023. Accessed 15.11.2023. Available at <https://www.economist.com/finance-and-economics/2023/10/01/how-carbon-prices-are-taking-over-the-world> The article states that 49 countries already have carbon pricing schemes covering 23% of global emissions, and 26 more are considering them.

However, it will not necessarily happen in a comprehensive manner, nor with equal speed across all third countries. There thus remains a need to address the carbon emissions embodied in finished goods. Article 13 of the CBAM Regulation foresees the extension of its scope to products, sectors, and subsectors prone to carbon leakage, noting this would provide the “long-term visibility, predictability and legal certainty” that companies need to decide how they should invest in decarbonising production. Scope extension is important to maximise the effectiveness of the CBAM and ensure fair treatment of European producers relative to imports across a wide range of sectors.

In the meantime, to level the playing field and address the loophole through which most imported finished goods circumvent the CBAM, the Commission should use the roll-out of the Digital Product Passport (DPP) for priority product categories under the Ecodesign for Sustainable Products Regulation (ESPR) to gather data on embodied emissions from production, and thus selectively bring imports of these products into scope.²⁸

On a more broadly political issue, given the current apparent backlash against green measures and indeed anti-EU feeling among some citizens, it may be worth reconsidering how revenues from the EU ETS and CBAM are allocated. Directly distributing some revenue to citizens could form part of a strategy to secure their support for more ambitious environmental measures. While not a panacea, this could diffuse some of the green backlash and also help address the challenge of the distributional impacts.^{29,30}



²⁸ This is foreseen in the Commission Staff Working Document Impact Assessment Report accompanying the Proposal for a regulation of the European Parliament and of the Council establishing a carbon border adjustment mechanism, 14th July 2021, available at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021SC0643>

²⁹ Mildemberger, M., Lachapelle, E., Harrison, K. et al. (2022) Limited evidence that carbon tax rebates have increased public support for carbon pricing. Nat. Clim. Chang. 12, 121–122 (2022), available at <https://www.nature.com/articles/s41558-021-01270-9>

³⁰ While revenues from the EU ETS 2 that covers buildings and transport will flow into the Social Climate Fund to address the burden of citizens and micro-enterprises most impacted by energy price rises, this would still be quite different from direct redistribution to all citizens.

Product Policy for a Low-Carbon Economy

03

Harmonising, strengthening, and integrating product policies will do much to enable a material-efficient circular economy. It will deliver more sustainable levels of consumption, extend the useful lives of materials and consumer goods, and encourage more reuse, refurbishment, and remanufacture.

Our proposed framework places a strong emphasis on making much better use of data and managing product information to minimise administrative burden for producers, while equipping policymakers with the tools they need to efficiently drive the transition at the European level.

The Ecodesign for Sustainable Products Regulation will enable the setting of eco-design requirements specific to particular product categories. It also introduces the Digital Product Passport (DPP) to electronically register, process, and share product-related information among supply chain businesses, authorities, and consumers.

As part of a broader product policy approach, we propose placing the DPP at the heart of a system that will:

- Minimise the reporting burden to producers while significantly improving data quality and granularity;
- Provide clear, consistent, and strengthened incentives for eco-design beyond minimum requirements;
- Make a significant contribution to tackling the problem of free-riding, whereby some producers do not fulfil their obligations; and
- Align with the polluter pays principle.

Alongside the ESPR, our proposed approach comprises:

- Expanding and harmonising Extended Producer Responsibility to cover a wider range of product categories with a broader scope of costs in a consistent way across all Member States;
- Enabling product taxation to be established at the EU level through shifting from the current need for unanimity to the use of qualified majority voting;
- Strategically using green public procurement to aid the establishment of new business models that can be more widely adopted;
- Extending product life through repair and reuse; and
- Providing clarity on when a specific product becomes a waste.

3.1 The Ecodesign for Sustainable Products Regulation

Broad-based carbon pricing through the EU ETS and CBAM will be a powerful instrument, but on its own it will not stimulate all the changes needed to make better use of products through their lifetime, such as design for disassembly, repairability, or reuse. The emerging product policy framework based around the Ecodesign for Sustainable Products Regulation (ESPR) will play the key role here.

The European Commission is already leading the world in its product policy ambitions. The proposed ESPR aims to “make materials last longer, ensuring their value is retained for as long as possible and boosting the use of recycled content” in order to “promote decoupling of economic development from natural resource use and reduction of material dependencies.”^{31,32}

The ESPR establishes a framework that will allow for the setting of ecodesign requirements, specific to particular product categories, that could relate to:³³

- Product durability, reusability, upgradability, and repairability
- Presence of substances that inhibit circularity
- Energy and resource efficiency
- Recycled content
- Remanufacturing and recycling
- Carbon and environmental footprints
- Information requirements

The architecture of the ESPR is built on product-specific rules. The Impact Assessment for the ESPR proposal rightly identifies that the alternative – general horizontal rules that apply to all products – would still require guidance for each product or group. This would create legal uncertainty and the risk of market fragmentation, given the likelihood that general rules would be interpreted differently for particular products across Member States.³⁴

This need for the harmonised application of rules is central to the effective functioning of the internal market. It is also key thread linking the measures that form our proposed framework.

³¹ European Commission (2022) Proposal for a Regulation of the European Parliament and of the Council establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC. Available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022PC0142>

³² Noting that the ESPR is complemented by the Proposal for a Directive on Green Claims and the Directive empowering consumers for the green transition through better protection against unfair practices and better information.

³³ European Commission (2022) Ecodesign for Sustainable Products Regulation, available at https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/sustainable-products/ecodesign-sustainable-products-regulation_en

³⁴ European Commission (2022) Commission Staff Working Document, Impact Assessment, accompanying the document: Proposal for a Regulation of the European Parliament and of the Council establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC, 30.3.2022, available at https://environment.ec.europa.eu/publications/proposal-ecodesign-sustainable-products-regulation_en

3.1.1 Digital Product Passport

Key to the ESPR proposal is the creation of the Digital Product Passport (DPP) to electronically register, process, and share product-related information among supply chain businesses, authorities, and consumers.³⁵

According to the Fit for Future Platform, DPPs may streamline the dissemination of information through value chains to the benefit of customers and the environment, while keeping the costs of compliance as low as possible. However, it is important to avoid multiple reporting; particularly for SMEs, “integration of reporting systems is considered to lighten the administrative burden.”³⁶



³⁵ Digital Product Passports can also play an important role in the context of the Corporate Sustainability Reporting Directive in respect of supply chains.

³⁶ Fit for Future Platform (2021) Platform Opinion: Eco-Design Directive, Opinion Reference 2021/SBR2/10, 23 November 2021, available at https://commission.europa.eu/system/files/2023-04/Final%20opinion%202021_SBR2_10%20Ecodesign_fup_0.pdf

3.2 Extended Producer Responsibility

Extended Producer Responsibility (EPR) is a key tool in the move towards a circular economy – ensuring producers bear responsibility for end-of-life management while offering the potential to incentivize design changes.

However, at EU level, EPR is only mandatory at present for packaging, WEEE, batteries, and end of life vehicles (ELVs). The recently published proposal for a targeted revision of the Waste Framework Directive will require all Member States to establish EPR for textiles.

The following measures are necessary to maximise the effectiveness of EPR as a policy tool and minimise administrative burden for producers:

Expand the mandatory application of EPR to a wider range of product categories, starting with a number of those listed as priorities under ESPR, such as furniture, mattresses, tyres, toys, and absorbent hygiene products.

Ensure that EPR covers as broad a range of costs as can be justified, more fully respecting the polluter pays principle and so transferring costs from taxpayers to producers. Producers should cover the costs of the fraction of waste that enters residual treatment or disposal and the costs of clearing up illegal dumping (where relevant). Where used (but not waste) products are re-sold outside the EU, the EPR fees should travel with them to support end-of-life management in the destination country.

Harmonise key elements of EPR scheme design, notably:

- The products in scope;
- The definition of obligated producer;
- The nature of reporting required – the granularity of the fee structure, and the frequency of reporting; and
- The criteria for modulation where this is applied. Alongside EU-wide implementation of EPR for the specific products and broader cost coverage, this maximises the chances of fee modulation driving positive change in product design beyond that required under the ESPR.

Ensuring that DPPs contain all the information required to set fees – and any modulation thereof – under EPR will mean that producers need only report once, for the purposes of completing their DPP. Identifiers such as barcodes based Global Trade Item Numbers (GTINs), linked to DPPs, can then be used as the basis for providing information to national EPR schemes via the point of sale in order to calculate the producer's obligation in each Member State. EPR schemes will have much more detailed product-level information than at present, with accurate 'placed on the market' data. In terms of maximising the EU's global influence, holding all such information as part of a DPP will facilitate the replication of this approach in third countries.

A complementary measure, establishing a single, EU-wide register of producers for each product category subject to EPR, would reinforce the benefits of harmonisation. All producers would need to register, but just once, at EU level.

Not only would this make it easier for EU-based producers who sell to multiple Member States, but it would also significantly boost efforts to tackle free-riding by distance sellers based outside the EU. With sellers on online platforms required to use a GTIN or equivalent and register as producers, the platform or payment processing provider would be able to make the connection between the obligated producer, the product, and the EPR scheme in the Member State to which the product will be sent.

Moving to such a system, and removing the requirements (where they currently exist) for producers without a legal presence in a particular Member State to appoint an authorized representative, would significantly reduce administrative costs and strengthen the functioning of the internal market.



3.3 Product Taxation

Taxation can be an effective and efficient economic instrument in changing behaviour, and it will be essential to steering the transition to a more resource-efficient society. Targeted product taxation, coordinated at EU level, could help change consumer behaviour in favour of greater circularity.

One of the expectations underpinning the ESPR proposal is that better information on a product's sustainability will influence consumer behaviour towards more sustainable purchases. However, we know that the issue of affordability could limit such behaviour change: the impact assessment notes that "price and quality are the most important decision factors for consumers when buying products."³⁷ If price signals are not aligned to incentivise consumers to opt for more sustainable products, the shift will be limited.

Fee modulation under EPR could play a role, but this may not always be an appropriate means of influencing consumer choice or driving change in design. This is particularly the case where the overall size of the fee is small relative to the price of the product, as with many electrical goods, for example. The ESPR provides the possibility of ruling off the market certain types of product, or certain design features; however, a large gap exists between a possibly ineffective incentive via fee modulation at one end of the scale and banning an item at the other. This gap should be filled by product taxation, with harmonised criteria and minimum tax levels established at the EU level.³⁸

This could be used in a very targeted way to reflect any scoring that products receive under the ESPR, to drive the uptake of recycled content in certain applications, or to amplify the effect of existing fee modulation if evidence shows that a hoped-for change is not occurring.³⁹ Detailed data through DPPs and accurate sales data at the Member State level, through the use of GTINs or equivalent, will facilitate such a measure.

Targeted product taxation could also be used in a broader way to achieve certain outcomes. One example would be vehicle taxation, where the basis (and magnitude) of acquisition taxation currently varies significantly across Member States. Given the over-riding need to reduce resource consumption, harmonised taxation could be used to incentivize a reversal of the current trend towards ever larger, heavier vehicles. A weight-based tax, applied EU-wide (potentially replacing existing acquisition taxes), would provide a strong signal here. With the ability to adjust the level of taxation to meet policy goals, this would be a flexible and adaptable instrument.

³⁷ European Commission (2022) Commission Staff Working Document, Impact Assessment, accompanying the document: Proposal for a Regulation of the European Parliament and of the Council establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC, 30.3.2022, available at https://environment.ec.europa.eu/publications/proposal-ecodesign-sustainable-products-regulation_en

³⁸ While beyond the scope of this framework, the removal of environmentally harmful subsidies is a key component of enabling an effective transition to a low-carbon material economy. See https://environment.ec.europa.eu/economy-and-finance/phasing-out-environmentally-harmful-subsidies_en

³⁹ In due course it may be preferable in many cases to opt for product taxation instead of fee modulation in order to stimulate changes in design given the inherent limitations in terms of fee modulation under EPR relating to the constraint of cost coverage.

Product taxation should not be constrained by an aim to correct prices by internalising external costs. Instead, it should go beyond this and be used to genuinely transform product design and purchasing behaviour through an approach that has been shown to work – the application of a meaningful price signal that incentivises the market to respond.

At present, however, taxation is one of the few policy areas where decisions are still taken by means of a special legislative procedure, requiring unanimity; this means that any Member State can wield a veto. Applying the proposed product taxation approach would require modifying the way the Commission exercises its competences in the field of taxation, through a shift to qualified majority voting. This would not require Treaty change. Article 192(2) of the Treaty on the Functioning of the European Union (TFEU) contains a specific passerelle clause for measures in the environmental field currently subject to unanimous voting, including provisions “primarily of a fiscal nature”.⁴⁰

The Commission itself has identified the positive benefits of such a change, noting that “harmonised and targeted taxation on negative social and environmental externalities in the EU Single Market... based on the user pays and polluter pays principle would also enable the EU to shift towards a more efficient and sustainable economy”.⁴¹ An appropriate mechanism would be required to efficiently and effectively set levels of taxation for specific products relating to specific criteria and then adjust these over time.⁴²

The ability to co-ordinate product taxation at EU level would mark a significant step forward in enabling a more integrated approach to product policy. Indeed, without it, the EU’s product policy toolbox is much less effective than it could be.

As discussed above in the context of the EU ETS and CBAM, for a number of reasons, there may be merit in directly distributing some of the revenue from product taxation to citizens.

⁴⁰ In order to switch to the ordinary legislative procedure for tax measures in this domain the Council must unanimously agree to do so, based on a proposal from the Commission and after consulting the European Parliament, the Economic and Social Committee and the Committee of the Regions.

⁴¹ European Commission (2019) Communication from the Commission to the European Parliament, the European Council and the Council: Towards a more efficient and democratic decision making in EU tax policy, 15th January 2019, available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52019DC0008>

⁴² For example, it might be that the Commission is granted powers to change the level of taxation within certain parameters over a given period in order to drive progress towards specific objectives, such as, by way of example, achievement of an overall reduction in new vehicle fleet weight.

3.4 Green Public Procurement

The public sector spends around 14% of GDP (around €2 trillion per year) on the purchase of services, works, and supplies in the EU.⁴³ This spend has enormous potential to shape the market and catalyse systemic change towards a more circular economy.

The first objective of green public purchasing and investment is to ensure that this €2 trillion is better spent – in the most materially efficient way possible. This is the ask of the whole economy, and it should be the expectation of government too.

Green public procurement offers tactical opportunities to advance sustainability through improved purchasing choices that lower environmental impacts. It also encompasses strategic potential to fundamentally transform entire markets towards circularity by creating long-term confidence in demand for circular and material-efficient solutions at a scale that justifies investment. A good example of this is the retreading of tyres.

The Joint Research Centre of the European Commission has recommended that requiring new tyres to be retreadable is a potential ESPR objective. Given that retreading saves up to 80% of the material required for a new tyre, and tyres can be retreaded at least twice, this has the potential to reduce the material demand for tyres by more than 50%.⁴⁴

However, to the extent that a retreadable tyre may need to be stronger than a non-retreadable one, such an intervention could have the perverse outcome of increasing the weight and thus material demand for tyres unless widespread retreading takes place.

The introduction of EPR, with a fee payable on new tyres only, would provide a modest incentive for retreading, while a product tax on new tyres would provide a much stronger incentive. However, unless the infrastructure for retreading is in place, widespread, readily accessible, and trusted, consumers will not naturally turn to retreading or retreaded tyres.

Green public procurement could play a strategic role in enabling the development of such infrastructure. Requiring retreading of all public authority fleets (above a certain size threshold in the first instance), and then rolling it out more broadly to encompass service providers etc., would mean the supply side is ready to scale up further as demand is stimulated across other types of users.

⁴³ European Commission (2023) Public Procurement, available at https://single-market-economy.ec.europa.eu/single-market/public-procurement_en

⁴⁴ European Commission (2022) Scoping study to assess the feasibility of further EU measures on waste prevention, available at <https://op.europa.eu/en/publication-detail/-/publication/0778b2a8-b61d-11ec-b6f4-01aa75ed71a1>

This type of approach is foreseen under Article 4 of the ESPR proposal; this would empower the Commission to adopt delegated acts, which may also establish requirements applicable to public contracts.⁴⁵ The Council and Parliament, in their provisional political agreement, have confirmed their agreement to empowering the Commission in this way, which will significantly strengthen the EU's product policy framework.⁴⁶

More broadly, the scale and scope of public procurement (going well beyond products) can play a key role in helping to reduce overall material consumption in line with the objectives and measures proposed in Section 5.1.



⁴⁵ European Commission (2022) Proposal for a Regulation of the European Parliament and of the Council establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC, available at [cellar:bb8539b7-b1b5-11ec-9d96-01aa75ed71a1.0001.02/DOC_1.pdf \(europa.eu\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022P0010)

⁴⁶ Council of the European Union (2023) Press release: Products fit for the green transition: Council and Parliament conclude a provisional agreement on the Ecodesign regulation, 5 December 2023, available at https://www.consilium.europa.eu/en/press/press-releases/2023/12/05/products-fit-for-the-green-transition-council-and-parliament-conclude-a-provisional-agreement-on-the-ecodesign-regulation/?utm_source=dsm&utm_medium=email&utm_campaign=Products+fit+for+the+green+transition%3a+Council+and+Parliament+conclude+a+provisional+agreement+on+the+Ecodesign+regulation

3.5 Extending Product Life Through Repair and Reuse

The combination of measures described above – the EU ETS and CBAM, DPPs and ESPR design for repairability requirements, full cost coverage EPR, product taxation, and the Commission’s proposal on rules promoting the repair of goods – will increase the attractiveness of repair over purchasing a replacement.⁴⁷ To facilitate repair in practice, where the supply side needs to be stimulated through creating demand, green public procurement can again play an important role.

To further enable product life extension through repair, clarity is needed on when specific products become waste. This is addressed in the section below.

While reuse sits at the top of the current waste hierarchy, it is important to recognise that it is a means to an end – reducing negative environmental impacts – rather than an end in itself. Accordingly, minimum requirements and standardised measurement and reporting requirements must be established for reuse systems. A stronger overarching policy framework for reuse systems can be achieved through amending the existing WFD in the short term, but sector-specific regulations addressing the particularities of different product types will be required to ensure clarity and harmonisation across all Member States.

As for repair, the combinations of measures described above will likely increase the relative attractiveness of reuse systems. While this may be sufficient to stimulate their further development in some instances, some practical barriers will inevitably remain. For example, effective reuse will often demand a system in which multiple businesses can participate. To date, the establishment of such systems has required exemptions at Member State level from anti-trust laws.

An EU-level exemption from anti-trust laws will be needed to allow systems to develop at the most appropriate scale (which may mean operating across multiple Member States). This would enable businesses within specific sectors to work together to devise efficient systems. The identification of non-binding, 1.5°C-compliant carbon budgets for these sectors, combined with the anti-trust exemption, would provide the basis for businesses to collectively design systems that will efficiently achieve the objectives.

Where these steps are not sufficient to encourage the development of effective reuse systems, the mandatory establishment of systems to meet reuse targets will be required.

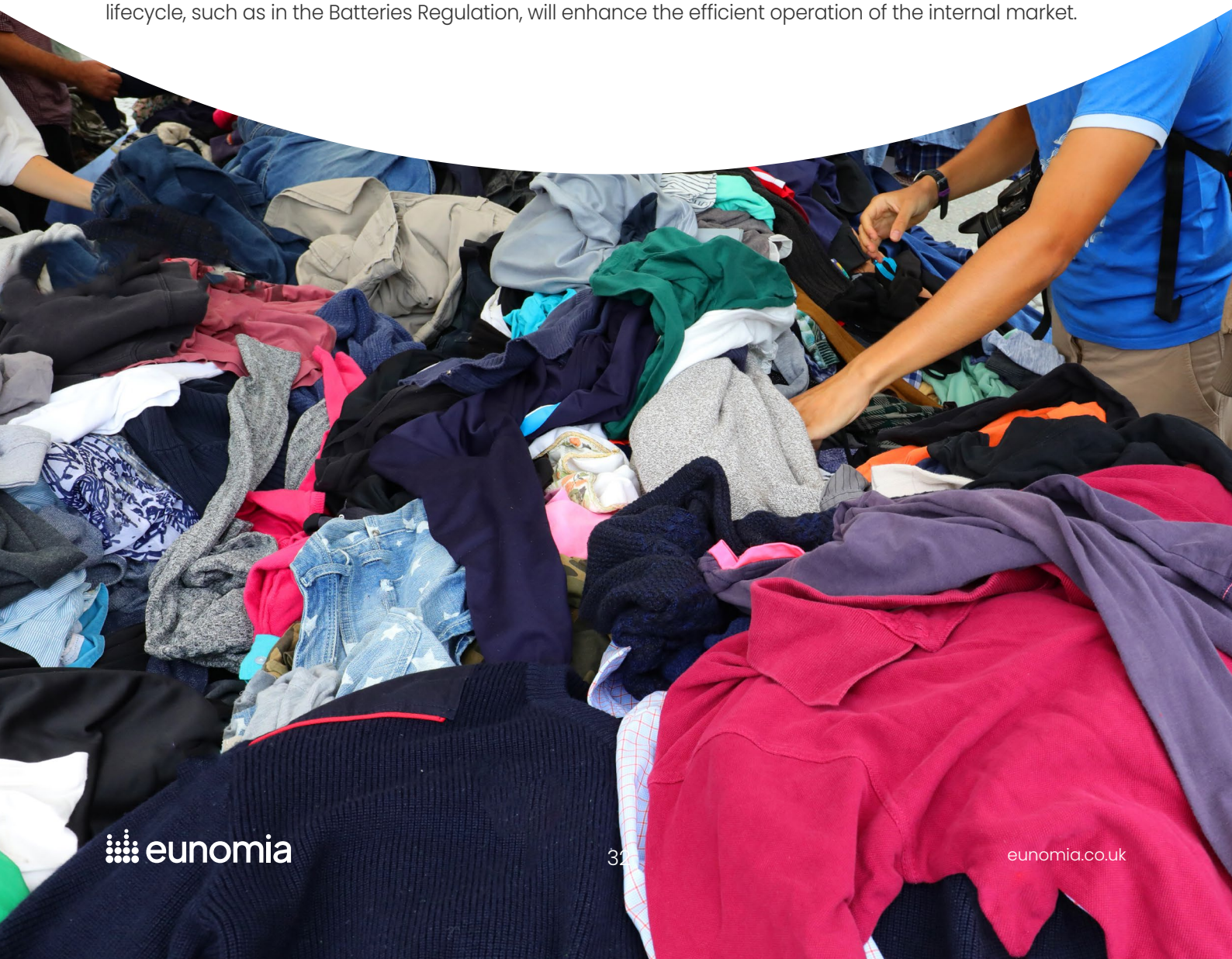
⁴⁷ European Commission (2023) Proposal for a Directive of the European Parliament and of the Council on common rules promoting the repair of goods and amending Regulation (EU) 2017/2394, Directives (EU) 2019/771 and (EU) 2020/1828, available at https://eur-lex.europa.eu/resource.html?uri=cellar:cdbeca83-c94e-11ed-a05c-01aa75ed71a1.0001.02/DOC_1&format=PDF

3.6 Clarity on when a Product becomes Waste

Harmonising the point at which a product becomes waste will facilitate repair and refurbishment by providing clarity and certainty to those involved in such activities in the EU.

The current horizontal rules in the Waste Framework Directive have led to differing interpretations for individual product groups across Member States. Given the large number of different product types and the range of characteristics and possible impacts and trade-offs, retaining these rules would create legal uncertainty for economic operators. This would only increase with growing consumer and political pressure to reuse, repair, and refurbish products.

Product-specific rules on the point at which a product becomes waste would avoid the risk of market fragmentation and ease the movement of such items within the internal market. More generally, for products, the rollout of more vertical product-specific regulations that cover all stages of the product lifecycle, such as in the Batteries Regulation, will enhance the efficient operation of the internal market.



Maintaining Material Value at End of Life



04

The Waste Hierarchy in its current formulation has underpinned some of the key drivers of EU waste policy, diverting material from landfill and increasing recycling rates by setting targets. However, we now need to drive change at a larger scale and faster speed, and this requires more nuanced decisions about waste management options.

The Waste Hierarchy might work conceptually for overall waste made up of many different materials. However, for some material groups – such as plastics, inert materials, and biowastes – the waste management tiers (from recycling downwards) are not ordered or differentiated correctly for the best environmental outcome.

A Waste Hierarchy in which recovery is always preferred to landfill cannot remain credible given the rapid change in power generation techniques, waste management technologies, and the design and composition of materials and products. For example, the environmental benefits of generating energy from incinerating fossil-carbon based materials (like waste plastics) continue to decline as our energy systems progressively decarbonise. Landfilling unrecyclable plastic waste is likely to become preferable to burning, as the carbon will remain locked up in the material until recycling becomes viable.

The Waste Hierarchy should thus be redefined to guide the management of waste in the most environmentally beneficial way, to mitigate both climate change and material consumption.

A revised hierarchy will guide policy decisions that help keep materials in use for as long as possible and avoid emissions, biodiversity loss, water stress, and other environmental harms from the extraction and processing of virgin materials. It will also recognise and minimise the impacts and emissions from waste management processes.

We propose a revised waste hierarchy that:

- Focuses solely on materials from the point at which they become waste.
- For dry materials, introduces a recycling hierarchy and a residual waste hierarchy.
- Within the dry materials recycling hierarchy, ranks recycling processes according to their potential for avoided overall emissions, based on their material preservation potential and process emissions.
- Within the dry materials residual waste hierarchy, removes the distinction between disposal and recovery, and instead prioritises on the basis of the relative net greenhouse gas emissions of the process for specific materials.
- For biowaste, introduces a separate biowaste treatment hierarchy. This should focus on ensuring the right balance between energy production from biogas and maximising soil quality through processes that preserve the nutrient, organic, and carbon content of the output in ways that provide for slow release to soil.

The existing hierarchy has been operationalised from an EU level, mainly through target setting on diversion from landfill and recycling rates. However, while frequently referred to and often embedded in national laws and regulations, the current hierarchy has not always been consistently applied. As decisions about waste management become more nuanced and sophisticated, making correct choices also becomes more challenging.

Critical questions attend the revised hierarchy: the extent to which it is prescriptive about technologies or principles based around outcomes; the extent to which it is detailed at EU level or left to Member States to apply; and the extent to which it depends on regulation and guidance or incentives to influence economic operators.

However, the most challenging questions need not all be answered immediately. The urgency for action is high and a start-then-strengthen approach is viable. The revised hierarchy can then provide a clear direction of travel to the market, with its implementation for priority waste streams – those where the existing hierarchy is least aligned with the best environmental outcome – steadily rolled out over time.⁴⁸



⁴⁸ It goes without saying that appropriate collection is a fundamental precursor to recycling, and is particularly important for streams such as textiles where progress needs to be rapidly made in the attainment of levels of recycling.

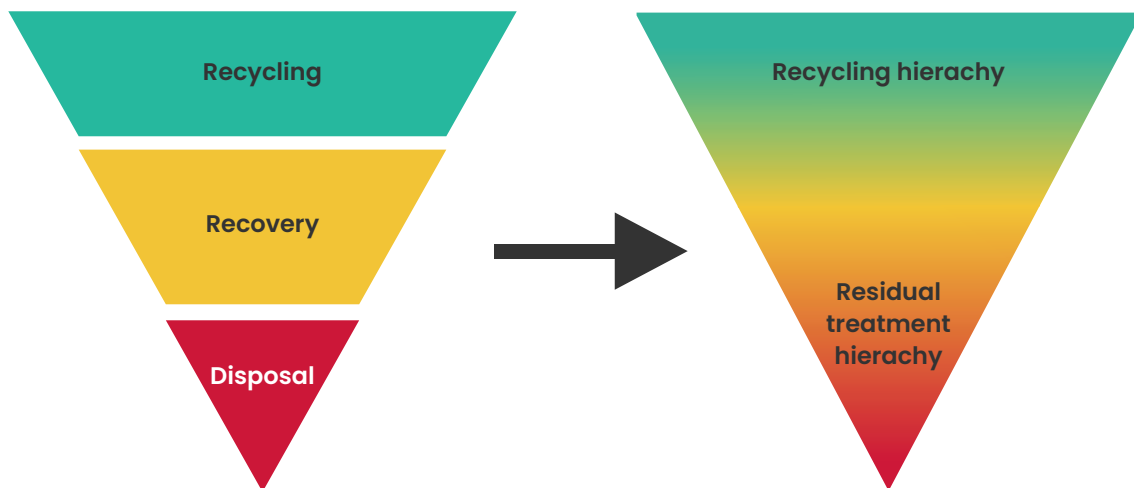
4.1 Dry Materials

When it was first developed, the Waste Hierarchy represented a world with fewer management and disposal choices, and general principles covered most materials. The range of technologies is now greater and differential material impacts are much better understood.

A functional hierarchy should be organised by materials and material groups. Thematically, there is a clear division between materials that are suited to treatment through biowaste processes (botanical wastes, food wastes etc.) and those that are not (dry materials).

For dry materials, a Recycling tier should take precedence over Recovery and Disposal operations, as in the existing hierarchy. Recycling preserves the use of materials so they can be used again in place of virgin raw materials; in the vast majority of cases, this will have a better environmental outcome than recovery or disposal. As such, recycling would by default always sit above forms of residual treatment for dry materials.⁴⁹

Figure 2: A Hierarchy for Dry Materials



Net Emissions* = Process Emissions – Avoided Emissions Potential
 Avoided Emissions Potential = Material Preservation Potential* Yield

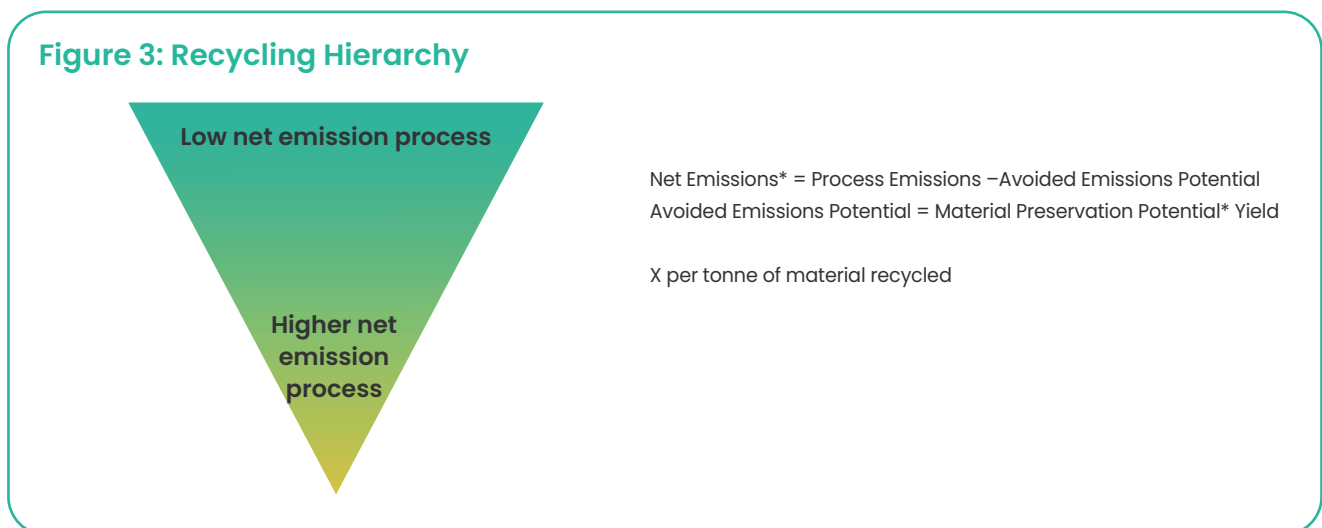
X per tonne of material recycled

⁴⁹ A new group of recycling technologies is emerging for plastics, referred to as 'chemical recycling' which arguably blur the boundary between recycling and recovery. This is generally due to a high energy demand – in many cases of the fossil materials they are partially recycling. High energy demand recycling processes where the parasitic energy demand is high enough and the yield of recycled materials low enough may mean that this hierarchical boundary becomes blurred. This would need to be reviewed separately and may form an exception.

4.1.1 A Recycling Hierarchy

The current Waste Hierarchy treats all recycling processes as equal. However, often a range of available recycling processes is available, each with different abilities to produce a given yield of recycled outputs with specific technical characteristics. Some of these technical characteristics result in material that might be considered high quality by some stakeholders, while other outputs might be considered suitable for what is often referred to as ‘down-cycling’. Other terms, such as ‘closed-loop’, are also often used to indicate the quality of recycling outputs.

Rather than defining a set of processes and placing them in a static hierarchy, our proposed recycling hierarchy orders processes by their overall environmental outcome, which is determined by their net GHG emissions. Lower net emissions processes are preferable to those with higher net emissions (see Figure 3).



The net GHG emissions from a process comprise the difference between its inputs (the GHG emissions associated with the recycling process itself) and outputs (potential avoided emissions of the recycled material displacing virgin material).

4.1.2 Residual Waste Hierarchy

The current Waste Hierarchy assumes that recovering energy from waste is always a better option than landfill; however, this is not always the case for some dry materials, such as plastics and other fossil fuel-derived materials. A Residual Waste Hierarchy would accommodate this complexity, removing the distinction between recovery and disposal, with its tiers reflecting the relative emissions from treating different materials.

As with the recycling hierarchy, the residual waste hierarchy is also ordered according to the overall environmental outcome (or net GHG emissions) of the process. However, the avoided emissions potential is conceptualised differently, as material is not preserved in the way that recycling preserves material.

For example, incinerating plastic with energy recovery may currently have an avoided emissions potential benefit, where the energy output displaces fossil-based energy sources such as coal or peat. However, this benefit will decrease – and ultimately disappear – as energy systems decarbonise.

4.2 Biowaste Hierarchy

Although biowaste treatment is considered a type of recycling in the current Waste Hierarchy, it is useful to consider it as a separate activity due to the distinct set of considerations for determining which process is most preferable under specific circumstances. Additionally, unlike in the dry waste management hierarchy, biowaste treatment processes are often not mutually exclusive; one may act as a precursor to another.

Akin to the case for a recycling hierarchy, a biowaste treatment hierarchy is based on the principle that not all biowaste treatment processes are equal in terms of environmental benefit.

To date, the focus in Europe has been on reducing landfill emissions while producing a net energy gain. Biowaste treatment has largely been seen as a way to generate renewable energy. However, the raw material inputs to crop production (nutrients such as nitrogen, phosphorous, and potassium, the organic content, and carbon structural materials) also have significant environmental impacts. It may be the case that high quality solid outputs from biowaste treatment become more environmentally beneficial from a climate change perspective than biogas generation as energy systems decarbonise. In a low-carbon energy world, the renewable energy benefits of anaerobic digestion will greatly diminish.

Thus the hierarchy should focus on achieving the right balance, which will vary by location, between energy production and improving soil quality through maximising the slow-release nutrient availability and organic/carbon content of the final product.

4.3 Operationalising the Hierarchies

To ensure dynamic application of the hierarchies and provide continual drivers for improvement, there will need to be measures that provide financial incentives for desirable outcomes. One such measure already foreseen is the possible inclusion of waste incineration under the EU ETS from 2028.⁵⁰ Alongside the need to meet challenging recycling targets, this should provide a strong further rationale for investment in processes such as mixed waste sorting.⁵¹

Other possible measures – which must be carefully targeted – include requirements for the use of recycled content in specific products. Ideally, these measures will take the form of taxation that aims to provide a meaningful and ongoing incentive to achieve targets. Significant emphasis will need to be placed on ensuring the integrity of the Single Market, with common rules and incentives across all Member States.

For biowaste, certain elements – such as controlling the quality of inputs and ensuring nutrients are actually going back into locations where they are needed – will be consistent requirements across all Member States. However, particular account should be taken of variations in climate and need in different parts of the EU. A fundamental precursor to the effective treatment of biowaste is its separate collection; this could be achieved, for example, through measures such as targets for reducing the volume of biowaste in mixed/residual waste.⁵²



⁵⁰ Directive (EU) 2023/959 of The European Parliament and of the Council of 10 May 2023 amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union and Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading system, available at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023L0959>

⁵¹ Eunomia Research & Consulting Ltd (2023) Mixed Waste Sorting to meet the EU's Circular Economy Objectives, February 2023. Available at https://zerowasteurope.eu/wp-content/uploads/2023/02/MWS_EunomiaReport_Feb2023-pdf

⁵² See for example Zero Waste Europe (2023) Waste Framework Directive – Inclusion of bio-waste targets needed, available at [joint_letter_-_biowaste_wfd_2_1.pdf](https://zerowasteurope.eu/joint_letter_-_biowaste_wfd_2_1.pdf) (zerowasteurope.eu)

Moving Towards a Materials Framework Directive

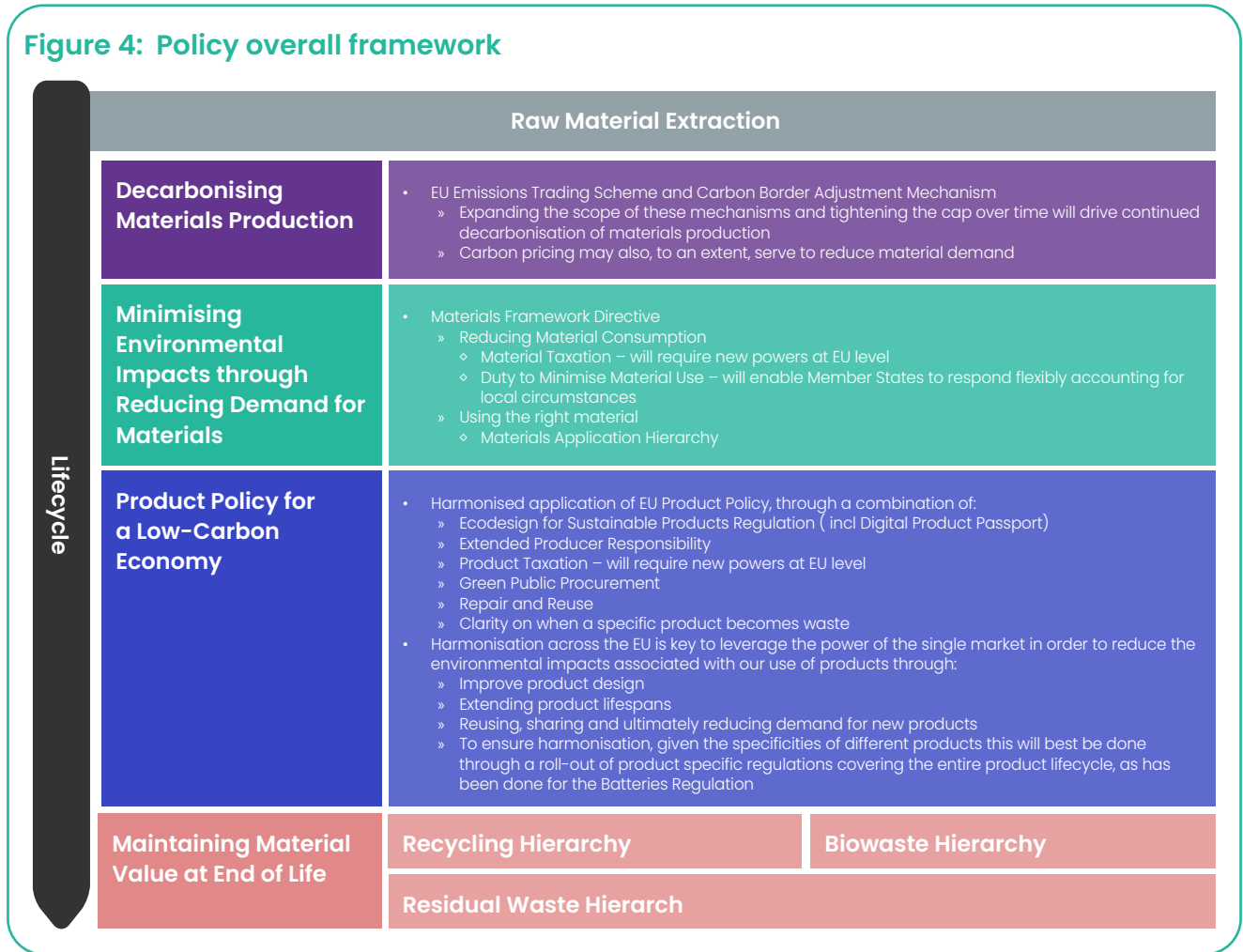
The Waste Framework Directive (WFD) has fundamentally changed the way Europe thinks about managing its waste and resources. From the first WFD in 1975, through revisions in 1991, 2006, 2008, and 2018, it has introduced concepts key to EU waste policy: the Waste Hierarchy, the polluter pays principle and extended producer responsibility. These are now central to circular economy thinking.

Throughout its history, the WFD has been expanded and strengthened in response to emerging environmental challenges and in line with rising levels of EU ambition in tackling them. While a great deal has been achieved so far, given the scale of the challenges we face in decarbonising the economy, we can no longer approach resource management from a waste perspective alone.

The scheduled revision of the WFD provides a key opportunity, but more legislative tools are needed to effectively move policy beyond a primary focus on the management of materials at the end-of-life. This means that further expanding and strengthening the WFD will not, on its own, be enough.

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Figure 4: Policy overall framework



Replacing the WFD with a Materials Framework Directive (MFD) would fill this policy gap. It would focus and catalyse efforts on the efficient (and reduced) use of materials across society. It would create a legislative space for policy that drives decarbonisation through the choices we make about which materials we use, and how and when we use them.

A Materials Framework Directive would enable the European Commission to go further in setting the additional policies needed to keep EU emissions within a carbon budget compatible with 1.5°C global warming.

The additional policy tools proposed here represent a mix of harmonised EU-level approaches and providing overall direction to Member States while giving them flexibility to respond given their particular circumstances. The tools are:

- Material taxation applied at the EU level;
- A duty to minimise environmental impacts through minimising consumption of materials; and
- A materials application hierarchy to ensure the right materials are being used in the right applications.

5.1 Reducing Material Consumption

As noted above (section 1.2), some Member States, such as Austria and the Netherlands, are already taking concrete action to reduce material consumption.^{53,54} More recently, a report has been published by OVAM calling for an EU Material Resources Law with legally binding targets on reduced material resource consumption.⁵⁵

However, simply setting targets for reduced material consumption at Member State level, or indeed at EU level, without the right combination of EU-level policy instruments in place could be counter-productive. It risks unnecessary costs through Member States taking matters into their own hands, potentially disrupting the internal market.

There are two broad approaches to reducing material consumption: either to directly limit the quantity consumed or to use price to achieve the reduction. Simply focusing on resource efficiency alone will not be enough, as greater efficiency can generate a rebound effect, often because the associated reduction in unit costs means that consumption rises.

The EU ETS, as discussed above, is a quantity-based instrument focused on greenhouse gas emissions, where prices then adjust based on relative supply and demand. With the proposed tightening of the cap over time, prices will continue to adjust in response. Product taxation, on the other hand, is a price-based instrument, which can be used to steer consumption choices towards more sustainable products (as described above). It will also have an effect on consumption and can be used to strategically drive a reduction in the overall level of consumption.

In addition, we propose a further price-based instrument – material taxation – as an approach that can be used strategically at the EU level. In order to further embed the imperative of reducing material consumption into all relevant aspects of Member State decision making, we also propose a generalised duty to minimise material use.

One obvious challenge here is in successfully navigating the energy transition which will, in its initial phases, be material-intensive. Consideration will need to be given to specific areas where material consumption may have to increase in the short term to provide longer term environmental benefits; however, this arguably makes it even more important to immediately reduce material use in less strategic areas.

⁵³ Federal Ministry Republic of Austria Climate Action, Environment, Energy, Mobility, Innovation, and Technology 2022 Austria on the path to a sustainable and circular society: The Austrian Circular Economy Strategy. Available at: https://circulareconomy.europa.eu/platform/sites/default/files/2023-10/Austrian_CES.pdf

⁵⁴ Government of the Netherlands (2023) National Circular Economy Programme 2023 – 2030, available at <https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/beleidsnotas/2023/02/03/nationaal-programma-circulaire-economie-2023-2030/NPCE+Circlaire+Economie+rapport+Engels.pdf>

⁵⁵ C. van der Ven, E. Watkins, and A. Bondi. (2023). "The Missing Piece of the EU Green Deal: The case for an EU material resources law." OVAM, December 2023. Available at <https://ieep.eu/wp-content/uploads/2024/01/The-missing-piece-of-the-EU-Green-Deal-The-case-for-an-EU-resources-law-IEEP-2024.pdf>

It is also important that, in managing the energy transition, we give due consideration to material efficiency. For example, this could involve prioritising public transport, lightweight electromobility, and active travel over a straightforward one-for-one transition from private diesel and petrol vehicles to similar, or indeed heavier, battery electric vehicles.

The overall framework will enable a managed transition to reduced material consumption in a controlled and efficient manner. With the right policy levers operating at the right scale, the European economy will be well placed to respond to binding targets.

The purpose of this paper is not to specify what such targets should be – although we indicate in Section 1.1 the scale of reduction needed globally across a number of materials to stay within a 1.5°C carbon budget. Its purpose is to outline the policy framework that would enable a coherent, effective, and efficient response to whatever target might be set.

5.1.1 Material Taxation

Material taxation will complement the EU ETS (and CBAM) and product taxation. While the EU ETS addresses the greenhouse gas emissions associated with the production of certain materials, it does not explicitly address the other impacts associated with the extraction of raw materials, such as biodiversity loss and air and water pollution.⁵⁶ Material taxation can directly address these issues. It can further incentivise both a reduction in overall material consumption and also, within this, a shift from primary to secondary materials.

To be most effective, material taxation needs to be co-ordinated at the EU level, with – to the extent possible – a harmonised approach to the basis of taxation. Even if levels of taxation are not harmonised, then levels that avoid meaningful discrepancies between Member States are desirable. As noted above, however, taxation is one of the few policy areas where decisions are still taken by means of a special legislative procedure, requiring unanimity, which means that any Member State can wield a veto. Applying material taxation would require a modification in the way the Commission exercises its competences in the field of taxation, through a shift to qualified majority voting.

Having the power at EU level to make decisions on material taxation is the necessary first step. Decisions on where and how to apply material taxation would then need to be made on a case-by-case basis, taking account of the effects of other instruments and the progress towards reducing emissions in line with the carbon budget.

As for product taxation and the EU ETS, we would recommend considering the direct redistribution

⁵⁶ The EU ETS may indirectly reduce these impacts through serving to reduce overall demand for materials.

to EU citizens of some of the proceeds.

5.1.2 Duty to Minimise Material Use

While for many aspects (such as product policy), taking a harmonised approach at EU level is very important, many activities will, quite naturally, have specific national, regional, and local characteristics. Across Europe there are considerable variations in, for example, the way that land is used and in the nature of transport, infrastructure, and the built environment.

Accordingly, we propose requiring Member States to ensure that those involved in using – or specifying the use of – materials are working to reduce environmental impacts through minimising the consumption of materials. As primary materials have the highest impacts in terms of greenhouse gas emissions, biodiversity loss, and pollution, reducing their use should be the highest priority, with reducing secondary material consumption a secondary aim.

This requirement would echo the existing Waste Framework Directive obligation on waste producers or other waste holders to treat waste in accordance with the Waste Hierarchy. Just as the Hierarchy provides guiding principles for decisions on waste management, the Materials Framework Directive should set out a material consumption hierarchy to guide decision-making.

While in principle applying to everyone, in practice this would be applied at the Member State level. It would also cascade to cities and regions, requiring them to consider their own carbon budget for 1.5°C and view the material demands from spatial planning and major projects through that lens.

Of course, increased material use in the short term to reduce environmental impacts in the long term may be justified in some cases. This would be a particularly important consideration in terms of material consumption for the energy transition. Justified exceptions to the general rule would need to be identified, bearing in mind the imperative to significantly reduce overall emissions in the next few years.

However, in many cases, minimising the consumption of materials will be fully aligned with reducing consumption and associated impacts in both the short and longer term. An example would be in land use planning, where opting for a more compact, high-density urban form can both reduce upfront material consumption and associated emissions and also reduce ongoing energy demand from buildings and transport.

5.2 Using the Right Material

While the principle of minimising overall material use (subject to the possible exceptions noted above) should be the overarching priority, there will inevitably be:

- **certain applications where the use of one material over another is clearly desirable from an environmental perspective, and**
- **for a given material, some applications that are clearly more desirable from an environmental perspective than others.**

For the former, the EU ETS and CBAM will address the greenhouse gas emissions associated with the production of different materials, and thus through price signals influence material choices.⁵⁷ However, the EU ETS does not account for the potential for carbon storage when biogenic materials are used, for example in construction. That said, the European Commission's proposal for an EU-wide, voluntary scheme for the certification of carbon removals does foresee the inclusion of carbon storage in products.⁵⁸

For the latter, there may be applications for materials that are considered strategic in terms of the energy transition, and it might appear in Europe's interest to guide or indeed ring-fence their use for these specific applications.⁵⁹ By contrast, some applications may be considered wasteful of such materials; this is arguably a value judgement but, given the urgency of reducing emissions, perhaps one that has to be made.

To an extent, some of these choices may effectively be guided by the broad incentives provided through the EU ETS, any future carbon removal scheme, and material taxation. Long-lived applications of certain types of biogenic materials that store carbon may be more attractive to the market than short-lived applications. EU-level product taxation can also play a guiding role. Weight-based taxation for vehicles, for example, may provide an incentive for the efficient use of scarce battery materials.

However, there may cases that are insufficiently addressed by the broader framework, and that, by exception, need to be addressed through targeted EU-level measures, through what we describe as a materials application hierarchy.

⁵⁷ Proposal for a Regulation of the European Parliament and of the Council establishing a Union certification framework for carbon removals, 30 November 2022, European Commission, https://climate.ec.europa.eu/system/files/2022-11/Proposal_for_a_Regulation_establishing_a_Union_certification_framework_for_carbon_removals.pdf

⁵⁸ An example might be carbon fibre where its use in relatively long-life (i.e. 30 years) energy generation applications such as wind-turbine blades would arguably be preferable to its use in cars, sports equipment etc. given the carbon intensity of manufacture and challenges in recycling. A similar argument could be made for lithium-ion batteries, where their use in mass transportation is more appropriate than in single-use vapes, where, while single-use vapes themselves are not a desirable product from a circularity perspective, alternative battery chemistries for single-use vapes could be used.

5.2.1 Materials Application Hierarchy

Under this proposed approach, a process would be devised for candidate materials and applications, accompanied by supporting evidence, to be put forward to the Commission for consideration. The Commission would then conduct analysis to determine the extent to which current incentives are leading to and will continue to lead to an undesirable outcome in the absence of EU-level action.

The Commission would publish its findings, determining whether there is a case to intervene and identifying:

- the applications where the use of one material over another is clearly desirable; or
- for a given material, applications that are clearly more desirable than others.

Action could take a number of possible forms, such as:

- Guidance for Member States and economic operators on implementing the identified objectives;
- A requirement that Member States and/or economic operators ensure specific actions are undertaken to meet the identified objectives;
- Application of EU level taxation (and possibly subsidies) to encourage achievement of the identified objectives; or
- Ruling off the market the use of certain materials in certain applications.

The EU already has powers to restrict the use of certain chemicals and hazardous substances in order to protect human health and the environment. Applying similar powers to the use of certain materials for certain applications, in the interest of hastening the transition to a low-carbon circular economy, is arguably similarly justified. In practice, for products, this could be achieved through product category rules under the ESPR.

Supporting Elements

The framework outlined above focuses on an integrated range of policy mechanisms designed to effectively and efficiently reduce material consumption. Given the proposed centralisation of several decision-making processes at the EU level, the Commission will, of course, need adequate resource to undertake these roles. This increased effort will be more than offset Union-wide through reducing the need for all 27 Member States to each undertake equivalent activities at national level.

However, even if core functions are well resourced, on its own the proposed framework cannot control all decision-making processes that determine our use of materials, although it may influence them.

A number of adjacent policy issues will have considerable bearing on the future trajectory of material consumption, while certain other measures would increase the effectiveness of the policy framework.

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6.1 Adjacent Policy Issues

Two very significant issues must be addressed to facilitate the move to a low-carbon material economy, but these lie outside the control of the measures proposed under the framework: the way that land is used, and – closely related to this – the food that we consume.

Shifts in both diets and food production choices could significantly impact the footprint of Europe's food system. Ultimately, the food system must also be considered as part of a wider policy on bio-resources and land use.

Land is finite and demand for it is set to increase in a world looking to feed a growing population, provide for increased use of biomaterials, enable carbon sequestration, and support nature restoration. Moving towards a diet rich in plant-based proteins has the potential to free up land to meet these competing needs.

The nature of land use in relation to the built environment also has a significant bearing on resource use, considering the relative material efficiency of high- versus low-density settlements. High-quality, high-density settlements have lower up front material requirements; they also reduce the distance that residents need to travel for daily tasks, encouraging active travel and making public transport more viable.

While the duty to minimise environmental impacts through minimising consumption of materials as part of the Materials Framework Directive will, indirectly, influence land use planning, direct intervention to promote a shift towards more sustainable built environments will be needed.



6.2 Measures that would increase the effectiveness of the Policy Framework

A major barrier to effectively addressing the triple planetary crisis is the continued existence at scale of environmentally harmful subsidies.

A recently published study by the IMF notes that globally, fossil fuel subsidies were \$7 trillion in 2022 – equivalent to 7.1% of GDP. Explicit subsidies (undercharging for supply costs) account for 18% of the total while implicit subsidies (undercharging for environmental costs and forgone consumption taxes) account for 82%. The authors note that fully reforming fossil fuel prices by removing explicit fuel subsidies and imposing corrective taxes, such as a carbon tax, would reduce global carbon dioxide (CO₂) emissions by 43% below business as usual levels in 2030 (34% below 2019 levels). This would be in line with keeping global warming to well below 2°C and towards 1.5°C.⁶⁰ It would also help to ensure that materials derived from or produced using fossil fuels are not underpriced.

Removing other forms of environmentally harmful subsidy would also support the transition to a low-carbon material economy. While the European Parliament, in its position on the 8th Environment Action Programme, voted to make it legally binding for all Member States to phase out fossil fuel subsidies by 2025 and all other environmentally harmful subsidies by 2027, the final text of the 8th Environment Action Programme was more muted.⁶¹ The Kunming-Montreal Global Biodiversity Framework under the Convention on Biological Diversity, to which the EU is a party, also calls for the elimination, phase-out, or reform of incentives, including subsidies, harmful to biodiversity.^{62,63}

Another major barrier is prevailing levels of inequality. A frequently heard objection to pro-environmental measures, especially where they involve increasing the cost of a harmful activity through taxation, is that this will adversely affect the poorest in society. However, to focus attention on pro-environmental measures is to distract from the root cause. The levels of inequality within society, both in terms of income and wealth, are ultimately political choices. Using this societal inequality as an argument against measures that would be effective and efficient in addressing the climate challenge is thoroughly disingenuous, especially as the poorest in society are often already more exposed to pollution, and more vulnerable to the impacts of climate change, than those who are more affluent.

⁶⁰ Black, Simon, Antung Liu, Ian Parry, and Nate Vernon, 2023. "IMF Fossil Fuel Subsidies Data: 2023 Update." Working paper, IMF, Washington, DC, available at <https://www.imf.org/en/Publications/WP/Issues/2023/08/22/IMF-Fossil-Fuel-Subsidies-Data-2023-Update-537281>

However, this argument against pro-environmental measures, the so-called greenlash, is a genuine threat to the implementation of an effective EU-level framework. While we have proposed the direct redistribution to citizens of some of the revenues from the EU ETS and CBAM, and from product and material taxation, this is not the complete answer. More fundamental change is needed. There are many good arguments for addressing inequality, and if doing so means a greater acceptance of the use of taxation to drive social and environmental gains, then that would be a welcome side-effect.

At the other end of the scale, research undertaken for Oxfam by the Stockholm Environmental Institute and the Institute for European Environmental Policy notes that the world's richest 1% are set to have per capita consumption emissions in 2030 that are still 30 times higher than the global per capita level compatible with the 1.5°C goal of the Paris Agreement, while the footprints of the poorest half of the world's population are set to remain several times below that level.⁶⁴ By 2030, the richest 1% are on course for an even greater share of total global emissions than when the Paris Agreement was signed. The authors note that tackling extreme inequality and targeting excessive emissions linked to the consumption and investments of the world's richest people are vital to keeping the 1.5°C Paris goal alive.

The economic instruments that make up the proposed framework will be more effective if there is greater equality – as it stands the wealthiest might be relatively untouched by tax-based measures to encourage more moderate consumption. While there is a strong welfare-economic argument for reducing income and wealth inequality, given the significance of consumption impacts resulting from the most wealthy in society, there is also a strong environmental one.

⁶¹ OJEU (2022) Decision (EU)2022/591 of the European Parliament and of the Council of 6 April 2022 on a General Union Environment Action Programme to 2030, available at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022D0591> Article 3(h)(iii) commits to strengthening environmentally positive incentives as well as phasing out environmentally harmful subsidies, in particular fossil fuel subsidies, at Union, national, regional and local level by a methodology that is set out by the Commission, in consultation with Member States, by 2023, to identify other environmentally harmful subsidies; on the basis of that methodology Member States shall identify other environmentally harmful subsidies and report them regularly to the Commission, allowing for a Commission report on the level and type of such subsidies in the Union, and on progress made on phasing them out

⁶² Convention on Biological Diversity (2022) Decision adopted by the Conference of the Parties to the Convention on Biological Diversity: Kunming-Montreal Global Biodiversity Framework, available at <https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf>

⁶³ European Commission (2022) EU at COP15 global biodiversity conference, available at https://environment.ec.europa.eu/topics/nature-and-biodiversity/eu-cop15-global-biodiversity-conference_en

⁶⁴ Oxfam (2021) Carbon inequality in 2030: Per capita consumption emissions and the 1.5°C goal, available at <https://policy-practice.oxfam.org/resources/carbon-inequality-in-2030-per-capita-consumption-emissions-and-the-15c-goal-621305/>

The Political Challenge

A low-carbon material economy is within our reach. As well as being essential for tackling climate change, it will enable continued European prosperity while reducing our wider demands on the natural world. But it cannot be done in a fragmented way. It requires action at the Union level.

The EU has been built on the concept of pooling sovereignty for the greater good. Nowhere is this now more important than in effectively responding to the environmental and economic challenges we face.

To achieve a net-zero, circular economy in which business can thrive, we need the full strength of the internal market to be applied in pursuit of this promising future. We need the ingenuity and drive of actors within the market to bring about transformation at the speed and scale required. This means acting at scale, with consistent rules and incentives at the EU level.

This paper sets out a framework that will enable the internal market to deliver the changes we need. But to get there, to establish the incentives the market needs, to persuade Member States to further pool sovereignty, demands political drive and vision.

Much is at stake, but if the EU can find the means to put in place the changes necessary, and influence the wider world in doing so, the rewards will be greater still.



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