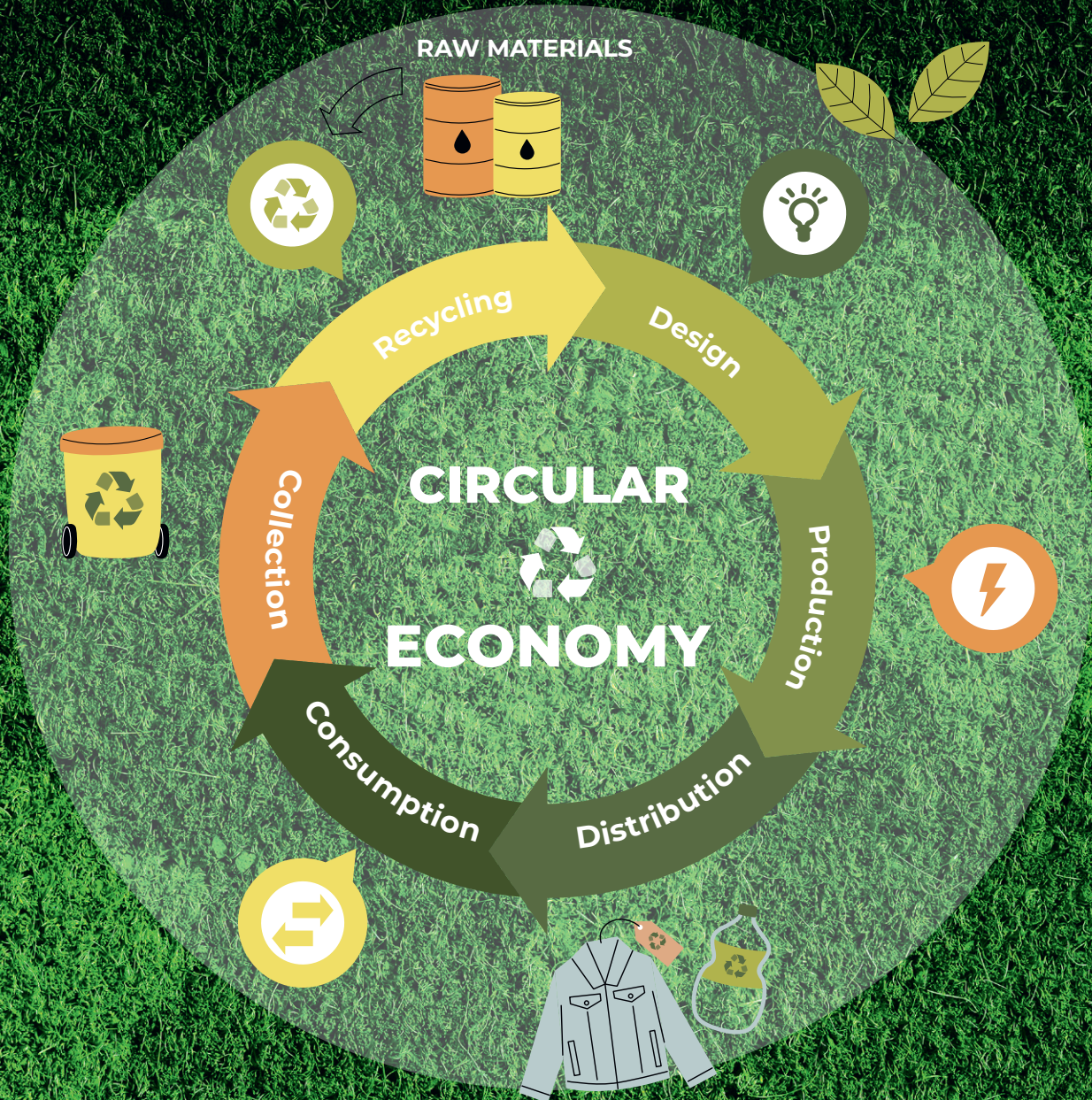




THE EUROPEAN FILES

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CIRCULAR ECONOMY IN EUROPE: PROMOTING SUSTAINABLE PRODUCTS AND CONSUMPTION



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I EDITORIAL

CIRCULAR ECONOMY IN EUROPE:

PROMOTING SUSTAINABLE PRODUCTS AND CONSUMPTION

Today's world is caught in increasingly frequent and fierce geopolitical, economic, and demographic tensions and stakes that are undermining our economies. Each new crisis reveals and emphasises Europe's external resource dependency.

With each passing day, the competition for scarce resources is intensifying and forces us to do more with less.

Europeans' awareness of the scarcity of raw materials is driving economic and institutional players to hasten the implementation of a more virtuous system of consumption and recycling of goods.

Circularity is one of the best opportunities for economies and businesses to address growing climate concerns while generating growth and new jobs.

With the Green Deal, the EU is leading the transition towards a circular economy.

Following the adoption in 2020 of a Regulation on Ecodesign for sustainable products and the EU Strategy for sustainable and circular textiles, a new string of initiatives focusing on packaging is underway.

The Ecodesign for sustainable products Regulation, which is currently being discussed in the European Parliament, will play a significant role in defining how our products are designed in the future. We need to ensure that our products are so designed as to have the longest possible life cycle and to be reusable and recyclable throughout the value chain. In other words, we need to 'design without waste'.

This new legislation introduces a 'design for recycling' approach and proposes a recyclability assessment process, with the aim of setting Europe-wide criteria for packaging design.

One of the innovations put forth by the proposed Regulation is a new European digital product passport, which will require products to be labelled with, identified by, and linked to data relating to their circularity and sustainability.

Furthermore, the introduction of a reparability index would allow buyers to understand how easy their products can be repaired. The establishment of a European register which lists reliable labels and allows their easy identification would contribute to effective implementation.

The transition to a more circular economy must be based on a shock of investments in recycling, sorting and waste recovery infrastructures; an obligation for all to recycle (citizens, administrations, economic actors from all sectors); coupled with a regulatory obligation to reincorporate recycled materials. The regulatory obligation to reincorporate creates the conditions for the emergence of sustainable downstream markets for recycled materials in Europe.

The role of local and regional authorities is of utmost importance. Business and civil society initiatives are key to realising a circular economy in Europe. Owing to the powers at their disposal, regional and local authorities are the main initiators of public procurement

in Europe, which makes them an important promotion tool.

Supporting companies in their transition towards a circular economy with the development of Public Private Partnerships in different key sectors (ICT, batteries, packaging, plastics, textiles, construction, foodstuffs), would be of great benefit.

Europe must become the first climate neutral continent in the world while increasing the sustainability and circularity of its production and consumption patterns. We need to create the proper ecosystem that challenges us to rethink the way we procure, transform, and use the resources we need.

Circularity is key to achieving meaningful change for our planet and is of utmost importance for securing the EU's strategic autonomy.

It is only by accelerating the transformation of our product and material production, consumption, and management patterns that we can work at the heart of current crises and build a more resilient Europe.

It's a paradigm shift that we are talking about here, which will not take place overnight, but circularity needs to become mainstream, and not the exception. What's at stake with this shift? Securing Europe's long term productivity and attractiveness, in a sustainable way.

Editor-in-Chief
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PROMOTING SUSTAINABLE PRODUCTS AND CONSUMPTION

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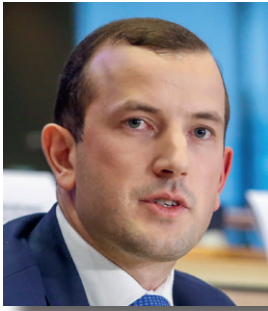
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VIRGINIJUS SINKEVICIUS

*Commissioner for Environment,
Oceans and Fisheries, European Commission*

Circular economy – the high road to strategic autonomy

EU Commissioner explains how transitioning to a more circular economy will reduce our demand for primary resources and energy used for production and consumption. It can also reduce vulnerabilities and susceptibility to supply chain shocks and disruptions like those caused by COVID 19, and more recently the Russian invasion of Ukraine. The need for greater EU 'strategic autonomy' is now widely understood – a more circular economy is indispensable to achieve it.

For the EU, strategic autonomy is an evolving concept. The risks associated with our over-reliance on these external sources have recently become starkly apparent. This is particularly true for critical raw materials (CRMs) that are economically important and essential for the transition to a green and digital economy. Most of these cannot be mined in Europe, and supply risks are high as they are often found in politically unstable areas. We are also dependent on some entire components and technologies, e.g. photovoltaic panels, which do not contain such a large amount of CRMs after all, but are manufactured in China in a large proportion.

The pandemic revealed the extent of the EU's vulnerability, and the potential for economic disruption. Russia's invasion of Ukraine has now reinforced the need to take more ambitious steps towards strategic autonomy, to mitigate our dependence on Russia for fossil fuels and fertilisers.

This is why strategic autonomy is now at the forefront of the EU agenda. We refer to it as 'open' strategic autonomy, recalling the EU's commitment to open and fair trade based around well-functioning, diversified and sustainable global value chains. The goal is to build up the EU's ability to make its own choices, while still playing a leading role on the global stage, maintaining our strategic interests and promoting our values.

In building up this strategic autonomy, the circular economy will be essential, not least because of the evident potential for recycling materials from waste. When we follow the principles of the circular economy, we use materials and resources as efficiently as possible, we maximise the value of products, they are kept functional for as long as possible and their use is optimised. In this way EU economic growth is decoupled from resource use, while minimising waste and pollution. Circular economy is central to meeting our climate, biodiversity and zero pollution objectives, but as part of the European Green Deal, it is also central to the EU growth and recovery strategies.

For all these reasons, it will free us from our dependence on imports of energy and other resources. More specifically, it will allow us to reduce our demand for primary resources, lowering energy use for production and consumption. It does this by making every day products consume less energy, by using them more efficiently and for longer, and by relying on recycled materials instead of primary raw materials.

To take one concrete example, during the early phase of the pandemic, the supply of chips was disrupted, giving Europeans a glimpse of the possible dangers ahead. Specialised media in manufacturing echoed the



tricks sometimes used by car manufacturers to keep production lines moving. Carmakers are using semiconductors taken from washing machines, rewriting code to use less silicon, and even shipping their products without some chips while promising to add them in later. As it stands, this value chain today is clearly vulnerable.

Similar critical value chains are those of most renewable energy technologies. To counter the problem of scarce components and elements, electric vehicle batteries could potentially be reused for energy storage in households equipped with photovoltaic panels. Rare earth elements inside permanent magnets from old generation wind turbines might be reused and recycled within the motors of electric vehicles.

In 2020, before the Covid pandemic hit, the EU's new Circular Economy Action Plan was already paving the way to increased circularity. Two years on, the Commission has now delivered many important initiatives contained in that Plan. The proposal for an Ecodesign for Sustainable Products Regulation adopted in March of this year is particularly significant. Building on the success of the previous Ecodesign Directive, which led to remarkable energy savings for EU consumers, the new Regulation will ensure that an ecodesign approach is applied to a far wider range of products, going beyond energy

efficiency to improve circularity and environmental sustainability. New physical design requirements will ensure that products last longer (via upgrading, reuse, repair. There will also be requirements to ensure that products are easier to recycle, and contain more reused and recycled components and materials.

One innovation in the proposed regulation is a new European Digital Product Passport, which will require products to be tagged, identified and linked to data relevant to their circularity and sustainability. This will make it easier to identify products that contain these valuable critical raw materials, facilitating optimal use and appropriate treatment when they reach the end-of-life stage. This combination of physical and data requirements should make a valuable contribution to mitigating EU dependencies on external sources of energy and materials.

The new regulation complements other existing and on-going actions that also target critical raw materials. In the revised Batteries Regulation, now in the final stages of legislative adoption process, recycled content should become mandatory for lithium, cobalt, nickel and lead, each of which are particularly important for these technologies. The recycled content targets will be accompanied with ambitious collection, recycling efficiency and material recovery targets.

Looking forward, the Critical Raw Materials Act announced by President Ursula von der Leyen will respond to calls from the European Council in the [Versailles Declaration](#) of March 2022 and the European Parliament Resolution on critical raw materials of November 2021. It should seek to diversify sourcing of virgin CRMs, and manage them better, and it will also recognise the enormous potential of circular approaches to achieving strategic autonomy.

Europe is not an island – we are a trading block, and we will always be happy to trade with external partners. But we need to build up our domestic capacity, not just for recycling, but for reuse, repair, and remanufacturing as well. The certainties of recent decades are falling away. We have to face this new reality, and consolidate the foundations we need for the green and digital transitions. Circularity is the strategic choice to safeguard that future.





VIVIANNE HEIJNEN

Dutch Minister for the Environment

Cleaner and more sustainable fashion industry calls for ambitious collaboration at the European level

Clothing is fun, everyone needs it, and through our clothes we can express our identity. Unfortunately, however, the fashion industry is still one of the most polluting sectors in the world. The Netherlands is making a case for an ambitious and collective European strategy, including a European ban on the destruction of unsold clothing.

As far as the textile industry goes, there is still a lot of progress to be made. Many pieces of clothing are short-lived, whilst their production process requires a great deal of energy and chemicals. The demand for textiles rises continuously and production increases. The reuse of textiles, on the other hand, is falling. The result: a major mountain of textile waste that continuously grows, within but also outside of the European Union. The Netherlands aims to turn the tide. In effect from 2023 onwards, responsibility for the collection, recycling, reuse, and disposal of clothing will be vested with the manufacturers who market such products. The goal is to improve and expand the collection of used clothes, in order to enable more efficient textile recycling and to give a larger amount of old clothes a new life. The Netherlands sees vast opportunities for a strong European strategy in this field.

Second-hand clothing is not on every consumer's radar. That is why this issue is currently highlighted at several locations in Dutch cities through campaigns involving pop-up stores, influencers, and promotional teams. The campaigns are focused on tempting shoppers to occasionally purchase second-hand clothing (pre-loved fashion). Thus, the direction in which the Netherlands aims to go, is made abundantly clear: promoting reuse, boosting the demand for second-hand clothing, stirring the market; in short, turning the tide of the fashion industry.

Currently, more than 55 per cent of cast-off clothing ends up as waste.¹ Only a very small proportion is recycled. That is a waste, because such fibres could be reused as a raw material for new clothing.

The market will not change of its own accord. Incentives are needed to create change. That is why, in 2023, the Netherlands will be introducing Extensive Producer Responsibility for Textiles. Thus, textile manufacturers and fashion chains will be responsible for the disposal stage of the textiles that they have marketed. The intended effect is to extend the lifespan of clothing and to encourage proper collection, reuse, repair, and recycling.

Other initiatives have shown that public-private collaboration is effective. A good example in point is the Denim Deal that the Dutch government concluded with Denim parties in 2020. This is the first time for all the actors involved in the manufacturing and processing of denim fashion to lay down collective agreements on producing smarter and cleaner denimwear. A wide range of actors from production companies, brands, and retailers to collecting and sorting agencies, cutters, and weaving mills is involved. The goal of the Denim Deal was to produce 3 million pairs of jeans composed of a minimum of 20 per cent recycled cotton, which goal has been achieved.

In addition to the steps that the Netherlands is taking at the national level, embarking on ambitious collaboration on a circular textile

chain at the European level is important. Consequently, the Netherlands is pleased with the revision of the European Ecodesign Directive², for which the European Commission refers to textiles as one of the priority product groups for which Ecodesign requirements will be developed. The Netherlands is of the opinion, that it will be important to opt for transparent goals and ambitious ecodesign requirements. These requirements should ensure that ways to reuse or recycle a discarded piece of clothing are considered at the beginning of its production process rather than at the end of life stage. As a result, clothes need to be designed in ways that prolong their lifespan and that enable the reuse of the fibres. In my opinion, this calls for collectively encouraging consumers to extend the use of clothing by repairing and reusing their clothes. And first and foremost, we need to prevent the destruction or incineration of unsold and returned clothing. As far as the Netherlands is concerned, a European ban on the destruction of unsold clothing would be an efficient and powerful big stick. This is the only way to get rid of the negative impact of fashion.

¹ Dutch refuse comprises some 169 kt of textiles per annum, i.e., 55.4 per cent of all discarded textiles.

^{1.1} [Waarom is het belangrijk om te sturen op de textielketen? - VANG Huishoudelijk afval \[Why is it important to direct efforts at the textile chain? - From Waste to Raw Material programme. Household Waste\] \(vang-hha.nl\)](#)

² European Sustainable Product Regulation



MIKA LINTILÄ

Minister of Economic Affairs, Finland

Transform sectors that use most resources into circular systems

What is circular economy? The goal of a circular economy is to replace our current linear system, in which finite natural resources are consumed and promptly wasted. This is in contrast with a more sustainable circular system where resources are not discarded but recycled, reused, repaired, and shared.

The circularity of materials provides vast opportunities for businesses. A move towards a circular economy presents a system to build a more fair and inclusive society. It is an integral part of the toolkit for solving global challenges. For instance, the European Green Growth program is supporting and providing financial instruments to speed up the systemic transformation towards circular economy. When the combination of several crisis hit Europe, it provided an opening to continue and speed up the actions for sustainable recovery programs.

A key player in the green transition is the industry itself. In Finland, they have developed their low-carbon roadmaps in close co-operation with the government. Our roadmaps, on the other hand, were published early in 2021. This helped us understand what the transition requires from different industries and from different sectors of society. The roadmaps have shown tremendous potential for innovation, as the markets for new clean products and services keep growing.

Finland has taken actions on circular economy as part of the National Strategic Circular Economy Program and national Recovery and Resilience Plan. The transition into a circular economy is a step toward in achieving the Government's carbon neutrality target by 2035. The national circular economy strategy set ambitious targets for consumption of non-renewable natural resources, the productivity of resources and the circular material use rate. Finland's strategy involves several policy instruments that provide funding for investments that nationally recycle key materials. Nevertheless, there is still work to be done.

In Finland, the focus of our roadmap work has widened from climate and carbon neutrality to resource related topics of circular economy. A large part of the resource-intensive industry has been utilizing circular economic solutions for years. The Finnish steel industry recycles a large part of European steel. The largest processes using virgin material are investigating the renewal possibilities offered by hydrogen economy and electrification. That said, virgin materials are still needed since green transition requires new materials and not everything is recyclable.

Bioeconomy has been based on the planned use of resources for decades, from forest management to the biodegradability and recyclability of products. There are several integrated recycling processes within these factories. The latest plants have energy-surplus processes providing both electricity and heat to their surroundings.

Mining, on the other hand, is still an industry that produces large amounts of waste. To tackle this, we must precisely seek for solutions within the framework of circular economy. The industry has already adopted *responsibility* as part of its operating principles, a principle that is still being developed. Additional waste streams and their potential as sources of both critical materials and bulk materials are currently being studied within the industry and by a national coordination group.

Green finance has continued growing year after year, and roadmaps are being established inside and outside the EU to encourage investors to finance the transition. Besides, higher climate ambition comes with more social ambition. Circular economy is one of the key sectors requiring a new approach for financing the transformation.

An open single market supports economic growth and the EU's global competitiveness, and makes the EU an attractive destination for investments towards Circular and bio-based solutions. The European single market provides a good platform for safe, transparent and compatible circularity of goods

and services. We have a long list of desires to boost circular economy including digitalization, innovation collaboration, industry policies and financing. They should all turn from a linear approach to circular value networks. The main message for all of us is that no one can undertake the process of circular economy and green transition alone. We need collaboration, new tools, new operating models and an innovative mindset.

Furthermore, a healthy business requires market demand. The circular economy is challenging the linear produce-use-discard-model by requesting longer use time, reparability and recycling of materials effectively. It also adds the value of moderation to markets and societies. Still the traditional products and services are often more cost effective in the short run. In Finland, we are experimenting innovative procurement models within a governmental program. This is already showing promising results.

A predictable operating environment for green transition is necessary for the future competitiveness of our businesses. The wider and innovative use of circular and bioeconomy solutions increase the EU's resilience and open strategic autonomy by offering diversified sources of supplies.

The EU must realize the potential of bioeconomy for the existing resources in Europe, such as agriculture, wood and forest, sea and other bio-based materials. "Bioeconomy 2.0" will deliver bio-based, high value-added, renewable high-tech materials, components and end products from sustainable biomass sources to key European industrial value chains.

Bioeconomy is a sector where Europe can achieve a global technological leadership position. In addition to circular economy, bioeconomy should be an elementary part of the EU's industrial policy and its existing instruments. There is a need for a swift transition from producing bio-based raw materials to producing high value-added bio-based products in Europe.



AMBROISE FAYOLLE

Vice-President of the
European Investment Bank

How renewable materials can power a circular economy

There is still an abundance of responsible sources for renewable materials in forestry, agricultural and marine biomass, and from bio-waste of different types

The population is growing fast. Resources are finite. The circular economy is no longer an option. It is an increasingly inevitable necessity. The only question is how to accelerate the transition to a more circular economy, in which we minimise waste and resource consumption, even as we maximize consumer utility.

The increasingly alarming impacts of climate change will force us to go beyond renewable energy, energy efficiency and reforestation in our climate action. We must consider the considerable climate action potential of pre- and re-cycling goods and materials. We must recognise that climate action and the circular transition are mutually reinforcing, because circularity will reduce material, energy, and water use, as well as CO₂ emissions. According to estimates, the circular economy has the potential to close a significant portion of the gap between current policies and the Paris Agreement's 1.5 degrees Celsius target that, otherwise, seems more and more difficult to reach.

The potential of the circular economy to replace fossil-based and other non-renewable materials with renewable ones is often overlooked. These could be obtained from wood, crop residues and bio-waste to produce packaging, textiles, chemical and construction material, for example. If based on sustainable feedstocks, such a shift has the potential to

decrease carbon emissions and to reduce the dependency on finite and fossil resources.

In circular economy discussions, we often think of the biodegradability of renewable materials. These materials, however, also have the potential for reuse, remanufacturing, and recycling. According to the European Paper Recycling Council, in 2020, 73.9% of all paper and board consumed in Europe was recycled.

As their name suggests, renewable materials are *regenerative*. By definition, nature's systems are circular. Still, we must be careful not to over-extract or deplete renewable materials for industrial production. We must think about the impact on local ecosystems and consider the interface with other land uses, in particular for agriculture, to ensure that the extraction of renewable materials for consumer goods and packaging materials is acceptable and sustainable.

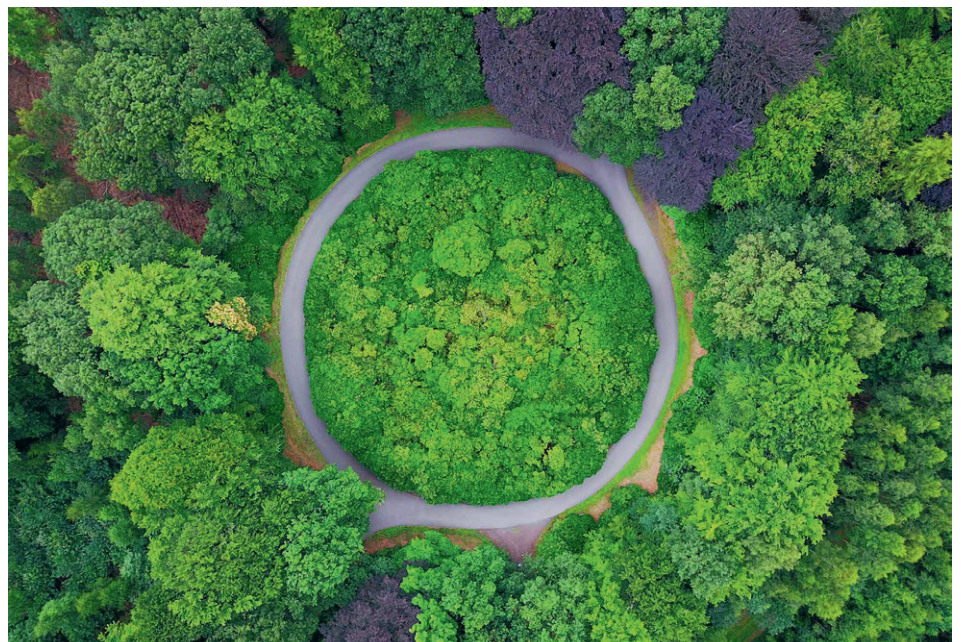
As a matter of principle, the substitution of fossil-based materials and goods by

renewable ones, for packaging for example, should be carefully assessed, according to the full life cycle impacts.

Apart from energy and fertilisers used for production and transport, sustainably managed and extracted biomass is carbon-neutral¹. Under these conditions, sustainable materials promote enhanced carbon fixation and/or short-term compensation in sustainably managed areas.

Renewable products and packaging produced from extracted carbon-neutral biomass and wood can act as temporary renewable carbon removals (i.e., negative CO₂ emissions), as they prolong the CO₂ sequestration from their natural carbon cycles. These carbon-removal effects can be significantly extended over time, when biomaterials and paper are reused or recycled. Cascading

¹ As referenced in the Land Use, Land Use Change and Forestry Regulation (EU) 2018/841 and REDII.



and long-lasting utilisation of recycled bio-materials is an effective way to increase the life span of these products for human use. They may go through several different uses, with life spans from less than two years (for wood energy) to several decades (as wood panels). At the end of its life, biomaterial can be composted or digested, returning organic material and nutrients to the biosphere. Even if they were incinerated, they would create no net fossil CO₂ emissions, because they replaced fossil energies.

Reuse and recycling of renewable materials has environmental and climate benefits. By reducing the harvesting of virgin materials in a cost-efficient way, the net benefit of capturing and then converting materials back into the economy is positive. Even systems with high recycling rates, such as the paper packaging industry, still need recourse to a certain amount of renewable, virgin material to compensate for losses and wear in the recycling process. For example, paper fibres in the carton board industry can be recycled on average more than seven times. In each recycling process, a certain percentage of fibre breaks into smaller strings, up to a level where it loses its technical characteristics and needs to be discarded.

There is an abundance of sources for renewable materials in forestry, agricultural and marine biomass, and from bio-waste of different types. But there are still limits. Extracted materials should be responsibly sourced and used efficiently to improve overall socio-economic welfare and health, while maintaining the growth and renewal capacity of the resource. It is also crucial to ensure that renewable materials are used in applications whose potential for circular production and consumption is the highest. That's done by life cycle impact assessments of carbon and material footprints.

Responsible sourcing standards, such as the Forest Stewardship Council and the Sustainable Biomass Program, are good tools to ensure a sustainable sourcing of renewable materials. In the frame of long-term sustainable production and extraction of biomass, we should aim for so-called second-generation feedstock - residues and by-products from forestry, agriculture, industry, or waste streams of different kinds.

With all these benefits, why is the replacement of non-renewable materials not much more common?

There are several general reasons and market failures behind the slow replacement process, including lack of consumer awareness of the benefits, and underdeveloped logistics that lead to high collection costs relative to the value of goods and materials recovered.

But technical limitations also apply. Take wooden products:

- The separation of wood waste contaminated by preservatives, paints and glue has some constraints. Improved techniques for sweeping and separating waste are expensive, and it remains difficult to sort the biomass waste fully automatically at a reasonable cost.
- The collection of products and the separation at source of wood from demolition and post-consumer, household biomass presents a challenge. It could be addressed through separate collection, standardization of biomass waste, and the labelling of reusable products.
- There is no pan-European obligation for source separation of recyclable wood and other bio-materials, as there is for glass, plastics, metal and paper. Regulations governing the maximum acceptable contaminants in particleboard vary from country to country.

Recycling activity should increase and be up-scaled rapidly, with further technology and system developments, combined with higher consumer awareness and corporate responsibility, provided relevant investors have access to funding and financing.

There is room for more research and demonstration on how and for which applications renewable materials could be used as substitute for fossil and non-renewable materials. As demonstrated above for wood and other bio-materials, there is also a need to further develop the circular reuse and recycling aspects of renewable and non-renewable materials, and to raise awareness through communication to end users and in the manufacturing sector.

Value chain collaboration, which is at the core of a circular economy, needs improvement, too. This requires investment in infrastructure and logistics to scale and improve the economics of high-quality recycling, as well as infrastructure and systems for reverse logistics.

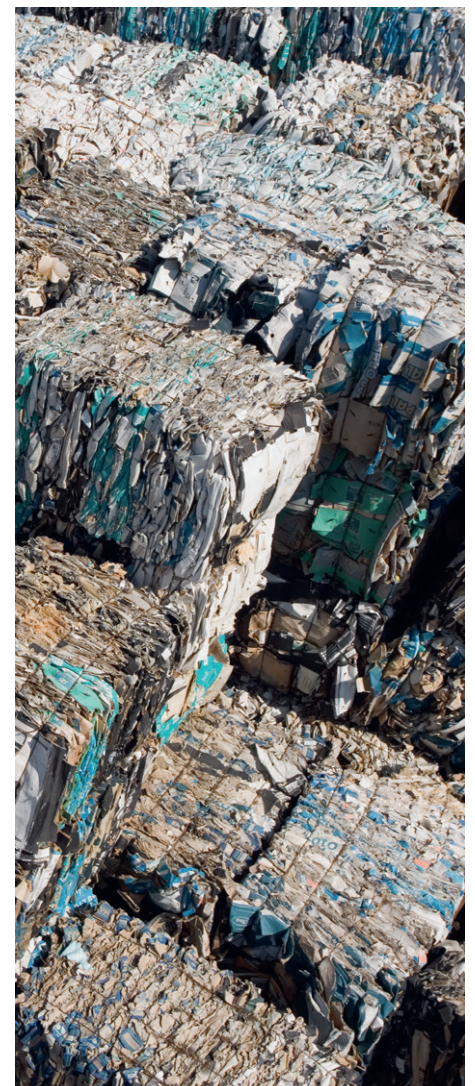
Supporting the bioeconomy and a more circular use of renewable materials is high on the European Investment Bank's agenda.

We financed PKN Orlen, a Polish oil refiner and petrol retailer, for the construction and operation of: a new centre for research and development of renewable chemical and biofuels technologies; an industrial demonstration facility for the production of 25 kt/year of sustainable, second generation sugars and bioethanol from cereal straw that can serve as biofuel, as well as primary materials for the production of bioplastics; and an innovative bio-propylene-glycol production unit with a capacity of 30 kt/year from biogenic glycerine.

Another of our projects upgrades and modernizes an integrated pulp and paper mill in Obbola, Sweden, resulting in further expansion of the production of recyclable and compostable packaging solutions from recycled pulp and renewable and sustainable wood sources. An important component of this project was the increase in the generation of renewable energy on site, so that the plant can cover all its thermal energy needs virtually without using fossil fuels.

At the European Investment Bank, we recognise the need to increase and develop our diversity of funding instruments for circular bioeconomy. Together with the European Commission, we contributed to setting up the European Circular Bioeconomy Fund, which is the first venture capital impact fund exclusively dedicated to the (circular) bioeconomy. The Fund targets growth-stage companies with a high potential for innovation, favourable returns, and sustainable impact. It offers flexible financing tools from equity to mezzanine.

From agritech to and biotech, blue economy and bio-based chemicals, circular investment has a high priority.



Resource efficiency and **circular economy**: essential for our economies and our environment



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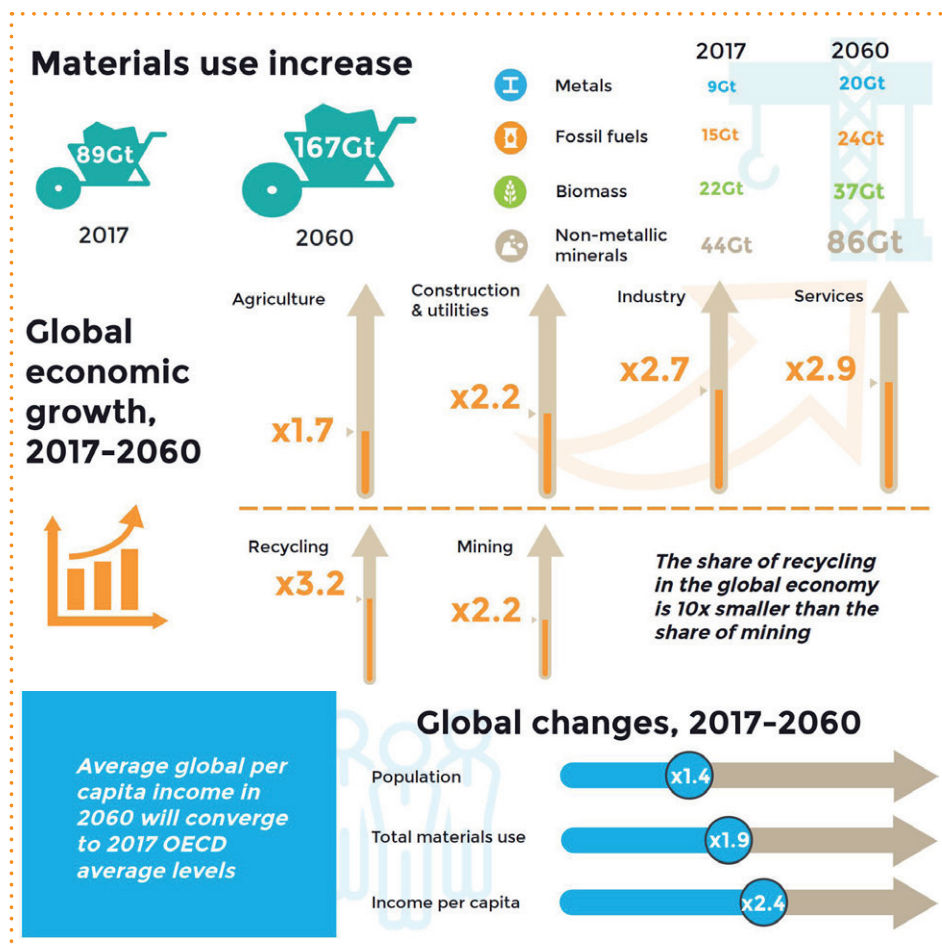
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As nations become wealthier, does this necessarily lead to a proportional increase in the weight of the materials they consume? Can economies further boost growth and prosperity while reducing their reliance on materials? These pressing questions lie at the heart of national and international policy discussions about transitioning to a more resource-efficient, circular economy. Moving towards a resource-efficient, circular economy is not an end in itself but rather the means for reducing the environmental impacts of material resource use while improving people's living standards and promoting new jobs and economic growth.

The business-as-usual on resource material use and disposal is unsustainable

In the last century, an unprecedented increase in natural resources and materials use has occurred in our societies. As the global economy expands and living standards rise, the world's raw materials consumption is expected to nearly double by 2060 (see Figure 1). This is particularly alarming because materials extraction, processing, use and waste management lead to very significant environmental pressures. These pressures range from local pollution at mining sites to GHG emissions from metal processing to air pollution from waste handling ([OECD Global Material Resources Outlook to 2060](#)). By 2060, GHG emissions related to materials management will put twice the pressure on the environment we see today.

Figure 1. Key facts of the OECD Global Material Resources Outlook to 2060



The business-as-usual is unsustainable, and these trends need to be reversed. Concrete actions across the entire value chain are required to address environmental challenges related to materials extraction, processing, use and waste management. The transition toward a resource-efficient, circular economy offers an opportunity to help achieve material security while improving environmental and economic outcomes. The level of ambition of national policies and international engagement will determine the extent of the reduction of the environmental impacts linked to material resource production and use.

Ambitious national policies aiming at a resource-efficient, circular economy are needed to support progress towards decoupling economic growth from material use

In addition to the imperative to close leakage pathways by improving waste management systems, the OECD has identified measures that are critical in helping to curb current trends in material use and disposal while protecting the environment and supporting economic growth:

- › [Fiscal instruments](#). Taxes on primary material resources extraction and use – the revenues of which are used to finance subsidies for product repair and reuse, as well as recycled goods and secondary material production– can be budget neutral while helping protect the environment. Yet, little of this is currently happening and there is significant room for increased ambition in this area, including by eliminating environmentally harmful subsidies. OECD model simulations for 2040 predict that implementing a material fiscal reform would significantly decrease the material intensity of the economy and allow a relative decoupling of primary materials use from economic growth in future years.
- › [Extended Producer Responsibility \(EPR\)](#). EPR schemes shift the responsibility for waste collection, treatment and disposal from municipalities towards producers. They can also incentivise producers to design their products for subsequent recycling. Doing so supports waste prevention at the source, promotes product design for the environment, and contributes to public recycling and materials management. For certain product groups, EPR schemes are already widely implemented in OECD countries and are generally successful. Yet, governments could further improve EPR performance and expand their use to new product groups. The OECD has produced a number of policy guidance documents supporting these objectives.

- › [Circular economy labels and information schemes \(CELIS\)](#) can empower market actors –both firms and consumers– to distinguish and discriminate products based on environmental performance. They foster resource-efficient, circular economy activities, such as encouraging the purchase of longer-lived products. Nevertheless, information schemes remain insufficiently developed. Against this context, governments could facilitate methodological advances to support product lifespan criteria. Governments could also further encourage enterprises and industrial sectors to develop information systems to improve resource efficiency along value chains, ensure standardisation and harmonisation, and develop regulatory information disclosure requirements.

International co-operation and coordination are crucial to advancing toward a more resource-efficient, circular economy

The environmental damages generated by the current use and disposal of material resources are harming global commons, such as the climate and oceans, and require international co-operation to resolve. In some sectors, the transition to circularity requires frictionless international trade to allow circular business models to scale up sufficiently and become competitive. In developing countries, the strategic deployment of Official Development Assistance (ODA) can play a central role in facilitating the transition by mainstreaming resource efficiency and material recovery in donors' programmes and projects.

There are a number of encouraging signs showing that some of this is now beginning to happen. For instance, at the United Nations Environment Assembly, governments have agreed to launch negotiations on the development of a legally binding, global treaty to end plastic pollution. In parallel, OECD data show that there has been a significant increase in development assistance to tackle plastic pollution ([OECD Global Plastics Outlook](#)). Other multilateral fora, such as the G20 and the G7, are also actively pushing the resource efficiency agenda, including by exploring ways to alleviate barriers to trade and investment in environmental goods and services. Clearly, further efforts are needed, and the OECD will support these through its evidence-based analytical work.

**FLORIKA FINK-HOOIJER**

Director-General for Environment at the European Commission, offers a preview of the coming revision of EU legislation on packaging and packaging waste

Turning waste into a resource

Europe is on a journey towards a circular economy. The road isn't straight, the destination sometimes seems far away and the situation in Ukraine has given another level of urgency to this journey. With the EU Circular Economy Action Plans we have the maps we need, but every now and then, those maps need an update. That's why the Commission adopted a new action plan in March 2020 which provides renewed guidance on the overall direction as well as detailed instructions about how to navigate the roads ahead. After the adoption of an Ecodesign for Sustainable Products Regulation and the EU Strategy on sustainable and circular textiles, a new set of initiatives focusing on packaging and green claims is now being finalised, and will arrive towards the end of 2022.

Across the EU, awareness of the need for a more circular economy is constantly on the rise. Citizens understand that if we continue to consume resources at the current rate, we would consume the equivalent of three planet earths every year by the middle of the century. And when material consumption rises, waste generation increases in step. Half of all global greenhouse gas emissions already come from the extraction and processing of natural resources. The only viable solution is a coordinated shift away from the traditional linear model, where we take, make, use and dispose, to the more logical, more circular, regenerative model of growth.

This journey is now well under way as the remarkably high recycling rates of aluminium demonstrate the economic benefits for manufacturers are immense, with recycled aluminium requiring only 5 percent of the energy required to refine the metal from raw materials. Yet, the recycling of some other resources is lagging far behind. Packaging waste is a case in point. The sector has a huge impact on the environment. It is one of

the main users of virgin materials – 40% of plastics, and 50% of paper used in the EU is destined for packaging – but also one of the main sources of waste, accounting for 36% of municipal solid waste.

With the Covid 19 pandemic, Europeans' awareness of packaging waste made a leap. In response to the rising awareness, the Commission revises the Directive on Packaging and Packaging Waste. In 2019, before the pandemic, the average European was generating almost 180 kilos of packaging waste every year. One estimate from the impact assessment we prepared when reviewing the existing legislation shows that the volume of plastic waste generated could increase by nearly 50% by 2030 and 86% by 2040, compared to 2018.

These trends cannot continue, and even though most recycling rates are improving, waste continues to grow faster than recycling capacity. A focus on recycling alone will no longer suffice. For that reason, the revisions we propose cover *all* aspects of packaging and packaging waste.

The topline objective is preventing waste before it is generated, and finding ways to ensure that far greater quantities of packaging are actually reused. Since 2018, the EU has had the objective of ensuring that all packaging on the EU market is either reusable or recyclable in an economically viable manner by the end of this decade. The reworked legislation will make that easier, addressing the barriers that are holding back the process, including design features that currently inhibit recycling. Additionally, concrete targets for packaging waste prevention, and for specific products and packaging groups are considered. Many stakeholders are in favour of such mandatory targets, which would mean added security for

industry investment, while also guaranteeing uniform implementation at the EU level.

In the past, the sector has suffered from the absence of an agreed definition of what constitutes recyclable packaging. Under the new legislation a 'design for recycling' approach is taken and a process to assess recyclability proposed, with the aim to setting EU-wide criteria for packaging design.

What we propose is an extensive review, covering everything from minimum inclusion rates for recycled plastic to harmonised labelling for consumer sorting. None of the details are final yet, but Europe is hungry for change, and I am confident that the new legislation will continue the much-needed evolution of this crucial sector.

EU laws have been driving improvements in waste management for five decades now, often powered by structural funds. But as the economy changes, these laws need to adapt, in line with the thinking behind the circular economy, and the realities of our new digital age. This revision of the packaging legislation follows the recast of the Batteries Directive, which is now in the final stages of co-decision, and will soon be transforming the industrial landscape.

The journey to the circular economy continues.

**SERRAVALLE SALVATORE**

Deputy secretary assistant for green economy, Ministry for ecological transition, France

Saving climate and biodiversity: there is no alternative but to rely on circular economy

The linear economy model is still dominant, following a long-lasting mechanism: extraction (of materials), manufacturing (of products), consumption, and waste. The illusion of infinite resources is at the core of this model but this is no longer sustainable, nor efficient.

This model is unsustainable. The extraction of large quantities of natural resources, whether used in the composition of a good, or to generate the energy necessary to produce that good, is depleting the planet's resources at an accelerating rate. Today, the world economy extracts nearly 100 billion tons of natural resources per year to satisfy our needs and meet our demands, whereas this figure was around 25 billion tons in 1970. At the same time, the world population has nearly doubled. This means that, on average, maintaining the our lifestyle we used to today requires the extraction of twice as many natural resources as our grandparents did 50 years ago. This progression is dizzying, and the resulting climate change and erosion of biodiversity are existential threats.

This model is inefficient, obviously a source of enormous waste: a very small tiny part of the extracted resources is put back into circulation at the end of their use, which generates an accumulation of waste that is the source of land and sea pollution that threatens biodiversity. In reaction to this "disposable" model in a world of dwindling resources, it is becoming imperative to invent another productive model. The circular economy is a possible answer, and everything contributing to its development must be encouraged.

It relies, first, on responsible producers and consumers who are aware of and sensitive to environmental impacts.

A responsible producer integrates environmental protection right from the product design stage to ensure that it optimizes the ecological impact over the product's entire life cycle until it becomes waste. It is transforming the production tool to produce the same good with fewer natural resources extracted (for example, by using less energy and incorporating more recycled materials), guaranteeing better reparability, extending the life span, and ensuring recyclability. France is recognized as a forerunner in eco-design. The anti-waste law for a circular economy of 2020 set a binding framework for the most polluting sectors. Those sectors are, in particular, subject to a bonus-malus system that encourages them to progressively increase the proportion of recycled materials in products marketed, and to ensure that products are more recyclable, reusable, and repairable.

The consumer's responsibility presupposes that he has precise and reliable information on the environmental impact of his consumption. The French law foresees that an environmental score will soon have to appear on everyday consumer products, such as food products or textiles. Based on several case studies that support the idea, we make the bet that a well-informed consumer will modify his behavior in his diet, for example, to reduce his environmental footprint. And in return, this should encourage the producer to adapt to these new consumer demands for products with a low environmental impact. This can become an element of non-price competitiveness of the companies that will have chosen a qualitative offer on the ecological level. A virtuous circle can therefore be set in motion between producers and consumers, with the role of the public authorities being to guarantee the reliability of the information to avoid misleading commercial practices.

A better-informed consumer will also be more likely to receive positively, and no longer as a constraint, the demands for more sobriety. Today, we talk mainly about energy sobriety, but the concept can be extended to all household consumption items.

There is also a geopolitical dimension to the circular economy. The scarcity of raw materials and the dependence of our economies on increasingly expensive and uncertain external supplies can call into question our sovereignty and capacity for resilience. Most of the materials used in our digital tools, or those needed for the energy transition (lithium for electric batteries or permanent magnets using rare earths for wind turbines), are located in China. Therefore, the transition to a circular economy is necessary to strengthen our economies by optimizing their use of resources.

Circular economy is also a source of jobs that can hardly be relocated. Changing the economic model makes it possible to envision ways of reconverting declining sectors. We create local jobs by developing an economy of repair, reuse, and recycling. Some estimates show that France could create up to 500,000 jobs by substantially reducing our consumption of natural resources.

Governments can also create financial conditions for the development of the circular economy. In compliance with European rules, reduced VAT rates in the repair sector could provide the necessary impetus.



SÉBASTIEN PETITHUGUENIN

CEO of Paprec Group

New models of industrial cooperation in materials recycling to strengthen the European circular economy

Successfully transitioning the European economy from a linear model to circularity is not only a technology matters but also an organisation and cooperation challenge. Beyond the "Cooperation is the new competition" mantra, the recycling industry is moving fast, developing industrial projects that interweave actors from the whole value chain to achieve raw materials circularity and contribute to the global decarbonisation of the European industry. These cooperation projects for example on products eco-design or closed loop recycling are keys for a greener European industry and for strengthening the European sovereignty. They need to be supported by an ambitious environmental and industrial policy and a strong European legal framework.

Paprec Group, one of the largest waste management operators in France and the leader in recycling, is an important player who participates in and supports the development of innovative projects aimed at enhancing circular value chains and European know-how in terms of materials recyclability.

Promising industrial partnership in closed loop for recycled plastic

Because the negative environmental impacts of the linear economy are questioning its licence to operate, the plastic industry is increasingly engaged into the transition toward circularity. Plastic recycling offers many opportunities for industrial cooperation and partnership. The value chains of plastics are evolving and reinventing themselves to meet the challenges of pollution and carbon emissions, reducing the use of fossil fuels and protecting the environment and human health. Manufacturers and plastics recyclers both stand to gain from sustainable and shared business models in terms of involvement and costs.

An early-mover of plastic circularity, Paprec has particularly invested in two ambitious

industrial projects amongst others: closed-loop recycling of soft PVC flooring and bottle-to-bottle recycling of PET. In these two exemplary projects, the engagement of parties from different stages of the circular value chain - being it voluntary or pushed by the market or regulation - boost the effective and complete recyclability of the material.

By combining their industrial know-how, Paprec and Gerflor (an international champion of soft PVC flooring) created a common company, Floor to Floor. Floor to Floor aims at increasing the volumes of soft PVC flooring waste collected and recovered and the rates of incorporation of raw materials from recycling into the industrial loop with innovative tools. With more than 5,000 tonnes of PVC recycled into new floors each year, this successful partnership builds on the voluntary and continuous commitment of Gerflor to improve the design for recycling of its products and to purchase the recycled material at a cost-covering price. A new investment will soon

bring the recycling and manufacturing plants closer together, this project has enabled the emergence of a virtuous and sustainable industrial model for soft PVC recycling.

In some occasions, recyclers are joining forces to develop an ambitious local industrial initiative, ahead of the value chain. A 75 M€ investment, France Plastiques Recyclage (FPR) is a joint company by the two main players in plastics recycling in France, Paprec and Suez. FPR is operated by Paprec who believed, back in 2009, that recycling was to become a must for plastics. With best in class quality, the food-contact rPET pellets produced by FPR can be incorporated up to 100% in food-contact packaging, especially for bottle-to-bottle closed loop. Despite a decade of hard times due to low virgin plastics prices and unstable commitment of the value chain regarding recycled content, we confirmed our commitment for PET circularity. The strong social demand for packaging circularity along with the regulatory push (SUP Directive)



Floor-to-Floor PVC recycling line, Paprec Plastiques Trémentines, France

proved us right and instilled a strong cooperative dynamic within the PET packaging value-chain. After a new investment, the plant is now reaching over 50 000 t/y recycling capacity, equivalent to approximately 1.7 billion PET bottles per year.

Collaborative R&D work is carried out with customers and partners. The exchange of expertise on rPET properties and incorporation of recycled material are driven by the imperious need of offering flawless recycled PET for beverage bottles and other food containers. Reciprocal challenges between recyclers, packaging producers and brand owners are leading to better designed packaging and to more stringent quality procedures, for the benefits of the customers and the global value chain.

Cooperation in the value chain to foster recyclability and recycling: the new paradigm for the industry

Further upstream in the chain, consortium of companies to define criteria for the recyclability of plastic packaging are established at European level. This is the case of the RecyClass project, a cross-industry initiative that brings together players in the value chain, not only the upstream but also downstream actors, to design common recyclability test methods and eco-design guidelines adapted to each polymer and packaging type. RecyClass also provides a scheme for recycling traceability as well as certification of recycled content into products. Recyclers such as Paprec are active members of this collaborative work on eco-design, which is essential to promote dialogue and process flexibility and, in the long run, to regulate the marketing of plastic packaging and substantiate recyclability claims.

Beyond plastics, this collaborative approach can be applied to other materials with equally – if not more – critical issues in terms of circularity, low-carbon industrial processes, but also regarding the industrial sovereignty and the supply of virgin raw materials for Europe.

In this regard, the management and recyclability of Waste from Electrical and Electronic Equipment (WEEE) is a industrial and environmental issue that needs to be tackled, particularly for the critical raw materials that these wastes contain. It requires efficient and innovative recycling technology and processes to successfully extract them. Better recycling of these materials, which can have a negative impact on the environment if not properly treated, is essential but calls for the development and re-industrialisation of the entire manufacturing chain so that the extracted recycled materials can find their way into new products in Europe.

Such cooperative projects are already being developed by the e-waste value chain which

intend to reach industrial scale. For instance, Paprec is part of a consortium aiming at developing lithium-ion battery of electric vehicle recycling process. Collection and dismantling tests are carried out by the recycling party, providing the battery manufacturers with test materials for the concentration and the separation of metals, recovery of cobalt, nickel and lithium and, *in fine*, manufacture of cathode active materials. This type of project, which targets a high recovery rate around a complete hydrometallurgical system fits into circular economy development ambition and EU objectives in terms of management and self-sufficiency of critical raw materials

Along with brand and manufacturers, recycling operators are key contributors to make circularity a reality: their expertise covers not only the collection, sorting and dismantling of waste but also, as discussed earlier, the upstream design stages.

This industrial cooperation integrated into the entire value chain is essential and represents the project model that allows the development of an independent European industry, integrated into the environmental issues of end-of-life treatment of all products and materials and allowing the development of the European circular economy around the recycling of quality recycled raw materials. The new European Circular Economy Action Plan is a great opportunity to encourage these initiatives by creating the appropriate legal and financial framework for an integrated European-wide market for recycled materials, which is crucial both for the decarbonization of the European industry and the sovereignty in Europe.



rPET pellets, France Plastiques Recyclage, Limay, France



WEEE sorting plant, Paprec D3E, Pont-Sainte-Maxence, France



CILLIAN LOHAN

EESC Vice-President in charge of Communication

The role of Circular Economy Actors in Europe

There is an old saying that money makes the world go around. In our drive to transform how our economy works it would be fair to say that people make the circular economy go around.

Those people come in the form of the many stakeholders who are driving innovation, shaping policy, and changing business models to embrace circularity.

In December 2015 the European Commission published the first Circular Economy Action Plan, an ambitious range of legislative proposals that would seek to minimise and ultimately eliminate waste from our society.

The focus of the Action Plan was very much on waste management, and some early rules on ecodesign. At this stage ecodesign still simply meant more efficient electrical products.

Something was missing to make this Plan a success. That crucial element was the people.

The actors, the businesses, the innovators, the think tanks and the regional governments who saw the reality, on the ground, in member states and would be at the centre of actually implementing these first changes.

They needed a channel to be heard. Equally, the European Commission needed a means of reaching these important players.

This is where the European Economic and Social Committee (EESC) came in. The EESC is enshrined in the Treaties on the Foundation of the EU. The Committee ensures that organised civil society can be heard within the institutions. It brings together employers, trade unions, and civil society organisations.

It was my honour as the EESC's appointed rapporteur to respond to the Circular Action Plan to propose to facilitate a group of stakeholders to be actively involved and engaged.

Together, the EESC and the European Commission established the European Circular Economy Stakeholder Platform (ECESP). Together we negotiated how this platform would work. Importantly, we gave ownership

of the platform to the stakeholders; businesses, think tanks, NGOs, existing circular networks and local government.

The ECESP website has since become the one-stop-shop for the circular economy. The go-to space to get information on the latest developments on Circularity.

It is a hub where we share good practices, where we share knowledge, and where we share what is currently happening in this exciting space.

The Knowledge section has studies, position papers, presentations and reports. The same goes for the Good Practices section.

The content on the website comes from the Stakeholder. Peer to peer sharing is at the heart of ECESP. Visitors to the website can search by area of interests, or by the challenges they are trying to address, or even by country. To facilitate the latter there is an interactive map on the website that allows visitors to enjoy a whistle-stop tour of Europe and see what is happening in the world of Circular Economy.

ECESP's annual conference is a two-day event hosted by the European Commission and the European Economic and Social Committee. The two-day event is the *Rendezvous* for the circular economy actors and community. The event is an opportunity to listen to high level speakers, participate in workshops and visits stands with projects and exhibitions. The next conference will occur on 27 and 28 February 2023. Check our website for more details.

A great and ambitious Platform requires coordination. For this purpose, we established a Coordination Group, where after I chaired the inaugural meetings, we handed the chairmanship over to the stakeholders.

The Coordination Group gathers a broad spectrum of organisations with a pan-European reach.

This handover has been key to its success because it allowed people at the front of

our economy and society transformation to lead the direction and conversations of the Platform.

Together this Coordination Group selects yearly important circular economy topics discussed in more detail in smaller formations called Leadership Groups. These Groups design a series of events, the #EUCircularTalks, to reach out to an even wider circular community, sharing ideas, learning from each other, answering questions and sharing challenges within specific sectors.

Beyond that, ECESP has brought together people from different sectors and geographical areas and allowed an open exchange. This aggregation has been critical to breaking the silos we can all operate in by default.

The success of ECESP reached beyond the initial specialised audience. We have feedback from New York to Sydney on how ECESP serves as a model for stakeholder engagement – putting people at the centre of the circle.

Partners such as the European Investment Bank and the World Bank joined the Platform, as financing arrangements and support for those who want to transition to a circular operating model became essential.

All 24 Coordination Group members are visible on the ECESP's website. They drive the work, they keep the circle turning. Success in the Circular Economy relies on exchanges, relies on people, and relies on working together.

ECESP is really an example of people making the circular economy go around. Anyone can get involved. Join us for an #EUCircularTalk, attend our annual conference, engage with us on Twitter or LinkedIn, exchange with the Coordination Group members, submit good practices or reports to the Platform via the website, we want to meet and hear from you.

I look forward to meeting you on the journey.

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DAVID CORMAND

MEP (Greens/EFA- France), IMCO Member

Ecodesign of products: the condition to put an end to the waste economy

As the world's largest market, when the European Union sets the rules of the game, companies act accordingly. This gives us, as European legislators, a regulatory influence that has an international impact. We must use this responsibility to set the framework towards a positive economy for people and the planet.

The proposal of a regulation on the eco-design of sustainable products in Europe is essential for the ecological transformation of our economical model. It is urgent to get out of a punitive linear economy, addicted to extractivism and waste. An economic model that favors the production of low quality, disposable, non-reusable, poorly repairable objects whose raw materials are neither recoverable nor recyclable must be abandoned. The European Union can promote a model of innovation through sobriety and the implementation of a market that favors use rather than ownership within a circular economy where nothing is lost but everything is recycled.

The ecodesign of products is a fundamental step for the realization of this positive economy. It allows us to reduce the impact on the environment by taking into account the entire lifecycle of a product. Regulating the choice of materials, the production process and making design choices to ensure that the materials necessary for their manufacturing are recoverable and reusable. Sustainability of a product is decided from the outset: to make it repairable, easily recyclable, with interoperable components and software, standardized spare parts... Setting these eco-design standards for all products in Europe is therefore fundamental.

But ecodesign and the circular economy are not magic wands. They will not be enough to meet the ecological challenges we are facing. We know that producing a new product is what generates the most negative environmental impact. This means that keeping a

product on the market as long as possible is what really helps reduce our overall environmental footprint. Replacing it every year with a new product, even one that is marginally more resource or energy efficient will have the opposite effect.

To be clear, maintaining an economic model that relies on the production of more and more new products, even if they are eco-designed, to replace the old ones, is not virtuous for the planet. In the same way, boosting the "artificial need" for objects that will seldomly be used - if ever - cannot be ecologically viable, whatever the conditions of production of these products. Placing an object on the market will never be environmentally neutral. It is therefore necessary to reorient our economic model of production and consumption towards the conservation of products over time, and therefore towards a generalization of second-hand sales, repair, reuse and reconditioning. This implies changing the current dominant commercial practices.

For example, one of the limits present, for the moment, in the Commission's proposal, states that ecodesign criteria should not disproportionately affect the competitiveness of companies. I think, on the contrary, that we need to redefine the criteria for a company's competitiveness. Competitiveness cannot be based on extraction, destruction and waste. The profitability of a company should no longer be based on the socialization of the negative externalities that its business model entails. Indeed, these negative impacts, these environmental destructions, are absent from the calculation of the value that defines "competitiveness" today. We must move from a competitiveness of destruction to a competitiveness of preservation, and thus from a vicious circle to a virtuous circle.

Ecodesign rules will create new qualification needs in the field of repair and recycling. The creation of a usage value from

existing products is a model that is gentle on the environment and intense in terms of non-relocatable jobs for small and medium-sized companies rooted in their territories. They will encourage the emergence of new economic models, based on values specific to the social and solidarity economy: the renting and sharing of collectively owned products, cooperation through free software... The freedom for the consumer to choose his operating system on his digital devices would establish a free competition on the software creation and the possibility to choose those which encourage a long life of products.

Last but not least : for the European Union, a sober and circular strategy is a question of strategic sovereignty. Not only does it maintains resilient and non relocatable economic activities on our soil, but it also reduces our dependence on raw materials that we do not possess on our continent. Regaining control over what our economy and our domestic consumption depend on is a decisive issue if we are to continue to keep the original promise of the Union: peace and prosperity.

A fair and sustainable ecological transition raises the question of our priorities, our needs and the definition of what we call "innovation" and "progress". Moving from purchasing power to the power to live well: having the time to connect socially with those around us, having access to a good health system, an education system that allows us to realize ourselves as humans and to take care of nature.

In the economic field, the ecological transition consists in giving meaning to our economy by taking it out of extractivism in order to make it less destructive for the environment, more sober in terms of raw materials and energy and less costly for households while creating local, qualified and sustainable jobs.



MARIA DA GRAÇA CARVALHO

MEP (EPP Group – Portugal), ITRE Member

Creating the right ecosystem for the circular economy

We live in particularly uncertain times. On top of the existential challenge of fighting climate change, we have been facing a global pandemic and, more recently, a war on the doorstep of the European Union, which is also having serious repercussions on the world economy.

This combination of factors forces us to rethink further the way we obtain, transform and use the resources we need. As consumers, producers and lawmakers, in a globalized society where everything seemed at one point easily accessible, we are now compelled to make choices. We are obliged to save and reuse. Today, according to figures released by the European Commission, only 12% of secondary materials and resources are brought back into the economy. This level of waste is simply incompatible with our sustainability goals.

The need to change is always demanding, but these times offer us also new opportunities. The next few years have enormous potential for transforming for the better our industry, our economy and the way we function as a society.

The circular economy was once an important part of our lives. Products were built to last, to be repairable and eventually recycled. As a result, there was less demand for raw materials and less waste. A number of smaller businesses and even industries existed around this market for the reparation and reutilization of products and components. Many households earned their income through activities involving reparation and recycling.

Rebuilding the circular economy is not only possible but also desirable, not just for the environment but because doing so

can actually have a positive impact in our economy and our industries.

However, in order to achieve this goal, it is not enough to establish high ambitions and adopt demanding regulations. We need to create the right ecosystem, in terms of incentives to producers and consumers but also the elimination of administrative barriers and burdens. Furthermore, we need to invest in skills, to develop the workforce needed to maintain this system.

Globalization is not the sole culprit for the “use and throw away” culture that emerged in the developed world over the past decades. Nor can we simply blame manufacturers for creating products that last less, in what is known as programmed obsolescence.

Increasingly demanding regulations, concerning products specifications, especially about which components could or could not be replaced and recycled, and by whom, have made it more difficult to manufacturers to design long-lasting and reusable products, and have made it more difficult to consumers to find qualified professionals willing to repair their products at cost-effective prices.

That is not to say that we should lower our regulatory standards for products. Quite the opposite: what we need to do is to raise those standards to make sure these products are built better, last longer, and are fully recyclable. However, doing this requires us to look at the entire legislative framework, correcting incoherencies and excessive red tape.

I believe we are headed in the right direction. The Circular Economy Action Plan, which builds on the successes of existing eco-design legislation, proposes new rules to make almost all physical goods on the EU market, from textiles to high-tech products, more

eco-friendly, circular, and energy efficient throughout their whole lifecycles. Moreover, it includes measures aimed at empowering consumers in the green transition.

It is important to mention that existing eco-design rules have proven themselves very effective. According to the European Commission, in 2021 alone, existing eco-design requirements saved consumers €120 billion and led to a 10% lower annual energy consumption by the products in scope. The goal is to increase substantially these figures by 2030, while also addressing the matters of durability, compatibility and reusability.

Companies need to build products and components that not only last longer and perform better but are also usable for different purposes and, in the case of electronic products, more compatible with other devices.

In this respect, the recent vote in the European Parliament to adopt a common charger for telephones and other portable devices was a clear step in the right direction. With this simple (but tough to negotiate) decision it is estimated that European consumers will save around 250 million euros per year, while e-waste will be reduced by 11,000 tonnes also annually. One can only wonder what we will achieve once this example is followed in this and other categories of products.

I personally do not share the concerns about the impact decisions like this can have on the companies' ability to innovate, because a strong bet on research and innovation is precisely what we need to do in order to achieve our ambitious goals. What must be ensured is adequate funding to R&I and, as I mentioned, the harmonized legal framework that will lead to the ecosystem that will allow the circular economy to flourish.



OLA ELMQVIST

Executive Vice President for Packaging Solutions, Tetra Pak

The primary function of food packaging is to protect the food inside, so it can be transported, stored and consumed safely by people across the globe. Today, about 75% of milk sold in Europe is packaged in cartons.¹ Shelf-stable packages – called *aseptic* – play an essential role in the food value chain. Combined with aseptic technology, a solution Tetra Pak introduced 70 years ago, they help keep food safe, nutritious and available - with no preservatives and no refrigeration needed – over months. In addition, aseptic packaging is easing storage, transport, and distribution, allowing producers to reach consumers in remote locations and expand food access.

By extending the shelf life of food, packaging also has the potential to significantly reduce food waste. Combatting food waste is a key component to addressing the climate crisis – 8% of global greenhouse gas emissions are attributed to food waste.² To put it another way, if food waste were a country, it would be the world's third largest emitter of emissions.³

Tetra Pak is driven by a specific purpose: to make food safe and available, everywhere, in a way that protects what's good - protecting food, people and the planet. As a world leading food processing and packaging solutions provider, we are constantly innovating in pursuit of this endeavour - in our own business and across the supply chain – while helping to deliver secure food systems and healthier diets. And we need to achieve this goal whilst operating within environmental boundaries.

Unlocking circularity through innovation and collaboration



As such, we fully embrace the European Union (EU) Green Deal ambitions on climate change, sustainable and resilient food systems, circular economy and biodiversity. As a sector, we provide essential food carton packaging that is mostly sourced, produced and recycled at scale in Europe and, importantly, features a lower carbon footprint than many alternatives, due to its high renewable share.⁴ It's good for Europe and good for the economy on which we all depend.

Strengthening the EU's circular economy requires boosting the local secondary raw materials market, scaling up recyclability of products and reducing waste generation. Our progress depends on driving growth within a sustainable framework by embracing systems thinking, science-based decision making and collaborative innovation. That is why transparent reporting on how we progress on our net-zero trajectory, whilst enabling a transition towards more sustainable and resilient food systems, is so critical.

Tetra Pak's commitment to reach net-zero greenhouse gas emissions (GHG)⁵ is central to our strategy because sustainability is as much our agenda as it is the European agenda. Tetra Pak's target to reach net-zero greenhouse gas emissions (GHG) across the value chain by 2050 has been approved by Science Based Target initiative (SBTi). We committed to set such a target in October 2021 under the Business Ambition for 1.5°C. For Tetra Pak, this means a 46% reduction of absolute scopes 1, 2 and 3 GHG emissions by 2030, and a 90% reduction across the same set of scopes by 2050.⁶ To achieve this ambitious goal we have taken a circular approach across our entire business.

Securing circularity in our portfolio

At Tetra Pak, we have chosen to focus on renewability and recyclability to ensure the de-carbonisation and circularity of materials and address the need for sustainable food packaging. We believe this is critical to realise

1 <https://www.beveragecarton.eu/wp-content/uploads/2022/03/ACE-Impact-assessment-study-of-an-EU-wide-collection-for-recycling-target-of-beverage-cartons-Roland-Berger.pdf>

2 FAO's [Food Wastage Footprint & Climate Change](#)

3 FAO's [Food Wastage Footprint & Climate Change](#)

4 ifeu 2020, "Comparative Life Cycle Assessment of Tetra Pak® carton packages and alternative packaging systems for beverages and liquid food on the European market".

5 Tetra Pak's net-zero trajectory builds on a combination of reduction and mitigation of emissions in the company's own operations, its supply chain and from the use of its products, and compensation of residual emissions via the company's nature conservation programme.

6 <https://www.tetrapak.com/sustainability/planet/environmental-impact/a-value-chain-approach>

our net-zero target while enabling more resilient and sustainable food systems. Both the EU and we, as an industry, will miss our targets if we do not use the Green Deal's objective as a guiding principle for all that we do. Therefore, we are accelerating the shift from high carbon, fossil-based materials to low carbon, renewable ones. No less important, those materials also need to be sourced responsibly, to minimise human and societal, as well as environmental, risk, including biodiversity loss.

Tetra Pak cartons are, on average, made of 70% responsibly sourced paperboard.⁷ Responsible sourcing needs to go hand in hand with transparent reporting, for which we work with leading sustainability assessment platforms. In 2021, we were the only company in the carton packaging sector to be included in the CDP leadership band for six years in a row, scoring an outstanding double 'A' for climate and forest and included in the top 1% of companies taking best practice action to tackle deforestation.⁸

Recycling contributes to a low-carbon circular economy by keeping valuable materials from post-consumer cartons in use and out of landfills. It helps prevent littering, saves resources, and reduces climate impact.⁹ We are stepping up work with our value chain and knowledge partners to innovate and share outside-the-box ideas to rethink food packaging from the ground up. The focus of our collaboration is making cartons more attractive for recyclers. In this context, together with our industry partners in the Alliance for Beverage Cartons and the Environment (ACE), we jointly adopted [Design-for-Recycling guidelines](#), which provide technical guidance to optimise packaging design that is fit for recycling systems.

The role of recycling

Beverage cartons are recyclable. They are collected and recycled at scale where waste management and recycling infrastructure exists. The industry has invested approximately €200 million into increasing the capacities for beverage carton recycling so far in the European Union and plans to invest a further €120 million by 2027.¹⁰ This ongoing effort translated to a significant growth of

the number of facilities that recycle cartons worldwide, from 40 in 2010 to over 170 today.¹¹ The collection of beverage cartons is critical to enable and secure this increase in recycling long-term.

Our aim is to not only invest in recycling, but to develop food packaging made entirely of responsibly sourced renewable or recycled material, that is recyclable and carbon neutral.¹² For example, we recently completed a commercial technology validation of a polymer-based barrier to replace the aluminium layer in aseptic cartons. Testing has also started on a new fibre-based barrier - a first within food carton packages distributed under ambient conditions. Alternative materials such as plant-based polymers also provide further opportunity to replace virgin fossil-based plastic with renewable, food contact-safe materials.

A collaborative approach is critical to success

Carton packages already have a lower environmental footprint than many alternatives¹³. In the European Union, the industry has set itself the 2030 goal to only produce beverage cartons from renewable and/or recycled material, increase the collection for recycling rate to 90% and the recycling rate of beverage cartons to 70%, while driving down carbon at every step of the value chain in line with the 1.5°C target.¹⁴ Climate change is a complex and multi-dimensional issue which cannot be solved by one entity or one solution, but we can all contribute. The most critical ingredient for success is collaboration and more partnerships mean faster and more circular solutions. For example, earlier this year, we became the first carton packaging player in the food and beverage industry to launch a cap using attributed recycled polymers.¹⁵

An innovation pathway driven by renewability and recyclability is key to addressing the de-carbonisation and circularity of materials and the need for environmentally-sound food packaging.

And collaboration doesn't end with packaging, it's also key to reducing waste in the food system. We have joined forces with several innovative companies to transform potential food waste into sources of nutritious food, as well as developing alternative protein-based food applications. We are also advancing co-operation projects to reinvent food production in a circular way, including to upcycle food waste and by-products from production. But it isn't just about reinventing existing foods, ecological pressure requires innovation to go beyond the bounds of existing systems. The goal here is to find alternative food sources that can yield higher output with low environmental impact.

Looking ahead

To meet the challenge of responsible production and consumption as set down by the UN's Sustainable Development Goal 12, and ensure we play our part in ensuring a circular economy in Europe, it has become more important than ever for us to use more sustainable materials, improve food production and availability, and increase innovations in technology to avoid food waste.

The private sector is key to making the EU Green Deal a reality and success: to reach climate neutrality by 2050, we will need deep emission cuts across all sectors. Therefore, in the long term, the Green Deal will largely depend on industrial transformation and innovative solutions.

Looking ahead, it is essential to foster an open innovation ecosystem to catalyse change and help transform the food processing and packaging industry on circular principles, whilst also ensuring that food is safe and available to all. In this context, European policy for food and packaging needs to be coordinated to enable and incentivise innovation to contribute to meeting ambitious objectives for essential food packaging.

11 <https://www.tetrapak.com/about-tetra-pak/stories/eliminating-food-packaging-waste>

12 We aim to deliver the world's most sustainable food package, a carton package made of renewable or recycled materials, that are responsibly sourced, therefore helping protect and restore our planet's climate, resources and biodiversity; contributing towards carbon-neutral production and distribution; convenient and safe, therefore helping to enable a resilient food system; fully recyclable.

13 ifeu 2020, "Comparative Life Cycle Assessment of Tetra Pak® carton packages and alternative packaging systems for beverages and liquid food on the European market".

14 [Tetra Pak Sustainability Report 2022 for download | Tetra Pak](#)

15 <https://www.tetrapak.com/about-tetra-pak/news-and-events/newsarchive/worlds-first-tethered-caps-carton-packages>. The attributed recycled polymers used in Tetra Pak carton packages are certified by the Roundtable on Sustainable Biomaterials (RSB), according to principles of attribution (RSB Advanced Products Category III).

7 [Responsible sourcing | Tetra Pak](#)

8 [Tetra Pak Sustainability Report 2022 for download | Tetra Pak](#)

9 [Tetra Pak Sustainability Report 2022 for download | Tetra Pak](#)

10 <https://www.beveragecarton.eu/wp-content/uploads/2022/03/ACE-Impact-assessment-study-of-an-EU-wide-collection-for-recycling-target-of-beverage-cartons-Roland-Berger.pdf>



MALTE GALLÉE

*MEP (Greens Group - Germany),
Member-Committee on the Environment,
Public Health and Food Safety*

Strengthening local business structures by improving durability and reparability of products

15. January 1925 was a sad day in the history of consumer and environmental protection. On that day, the biggest light bulb manufacturers sat together and founded what later became known as the "Phoebus Cartel". They decided to design bulbs in a way that limit the lifespan of bulbs to 1,000 hours - far below what was technically possible - to boost the sale of their products.

The Phoebus Cartel case is a classic example of planned obsolescence, a practice that is widely common today but often hard to prove. Product engineers and designers have the freedom and the incentives to build washing machines with little plastic mountings that break after two hundred wash cycles or printers with tubes that become clogged after three years.

Unfortunately for the consumer and the environment, these practices often make economic sense for individual companies. The cheaper the parts, the shorter the lifespan, and the faster comes the new demand.

But for our economy as a whole, these practices are nothing more than inefficiency and a waste of resources, while the public and the environment bear the costs. Almost all the environmental impacts of products are determined at the design phase, and we let the designers decide whether products are repairable and durable or not. This has to change.

First, we must align the interests and incentives of companies with those of society and the environment. Businesses should not be allowed to benefit or gain a competitive advantage from cutting the turn short. This applies as much to the design of their products as much as it does to claiming that they are green, or sustainable, while their claims are impossible to verify. We need a legislative framework that favors the development of

genuinely long-lasting, reusable, and recyclable products, and services that support them. This is why early obsolescence, poorly performing products and greenwashing must be banned and durability promoted. There is no technology neutrality.

Second, we need to address the issue of availability and accessibility of spare parts and repairability information. A huge problem why many products become waste far too early is the lack of access to spare parts. Many companies refuse to provide them or ask for unreasonable prices, which induces consumers to buy a new product, instead of repairing the old one. In addition to spare parts, producers must be obliged to provide information on repairability. Here we need a reliable repairability score, to be developed within the Ecodesign framework, that should also contain information on availability of spare parts.

Thirdly, we must provide the repair and refurbishment sector with legal certainty and better information. Independent repairers face lawsuits because they are sometimes seen as manufacturers but lack the ability to provide all the information about the product they sell. For the circular economy to work, and for the repairing sector to flourish, there has to be a business case. For this, repair companies need legal certainty and better information.

Hence, the digital product passport - still in its infancy - is a critical piece in the puzzle, bridging the gap between the digital and the green transitions. We must ensure companies disclose reliable information about their products and operations, throughout the value chain, all the way down to the sources and qualities of their raw materials, so that these products and materials can be kept in circulation in full transparency as they go

through refurbishment, repair, reuse and recycling.

We should stop thinking of repairers as cute little micro businesses and start recognizing them as proper companies, with multi-billion prospects for business right here in continental Europe. As such, together with consumers, they have the power to break the monopolies of large multinational corporations, enhancing the competitiveness of the single market and supporting local value creation for the benefit of communities and the environment.

But we can also be confident. New rules create new business models and thereby new front-runners. Most of the paper in the world comes from paper machines from a company in southern Germany. But this company does not produce new paper machines anymore. Why? Because the entire business model rests now on maintaining the existing machines that simply just won't break. Quality over quantity - this must be the leading principle for our economy.

The climate and biodiversity crisis is here and now. But we cannot only think of emissions reduction and saving the forests, without at the same time reducing dramatically our consumption and extraction of resources. Circular economy is what is missing to make ends meet within the planetary boundaries. We know what must be done to make it happen. And the time to act is now.



SIRPA PIETIKÄINEN

MEP (EPP Group - Finland), Member of the Committee on Economic and Monetary Affairs

A climate neutral, resource efficient and circular economy

If the whole world would consume like an average European, we would need three planets to satisfy our consumption. A transition to climate neutral, resource efficient and circular economy would bring us closer to our planetary boundaries - the one planet that we actually have. In addition, it would benefit our economies and increase our GDPs.

Transition to a circular economy is not only about environmental sustainability, but there is also a real economic reason and benefit. We have limited amount of natural resources and the sustainability challenge is enormous. The competition for the scarce resources is intensifying every day, making the one who is able to produce the most goods from the least resources, the winner.

The EU has the information, knowledge, research and innovation on circular economy, and we consider ourselves the global leader in the field. A well-functioning, union-wide common circular economy has a huge importance for the strategic autonomy of the EU. With circular economy, we would ensure that our economies are future-oriented, resource-efficient and self-sufficient. In addition, circular economy has a potential to increase the EU GDP by 0.5 percentages and create more than 700 000 new jobs by 2030.

Green technologies, renewable energy production and energy storage require a large amount of rare raw materials. The EU action plan for critical raw materials recognises this while stresses that the majority of these raw materials are in the hands of states outside the Union borders, giving the competitors a competitive advance over the EU. With a full circulation of critical materials, we ensure that our green transition is not fully dependent on the global markets of these scarce resources.

During my political career in the European Parliament, I have been working to promote circular economy policies and to facilitate the market development of circular processes and innovation. We need more ambitious policies to facilitate the transition towards fully circular economy, to promote the best available techniques, to promote sharing economy, and to eliminate unsustainable practices based on the linear economic model. We also need to tackle the issues of greenwashing while protecting the consumers from misinformation, and guide their consumption habits towards more sustainable ones.

Up to 80 percent of the environmental impacts of products are defined during the design phase, which is why the early stages of the product design play a crucial part in combatting the products full life-cycle environmental impacts. Ecodesign for sustainable products regulation, which is currently under the Parliament consideration, will play an important part of how our products will be designed in the future. We have to ensure that our products are designed in a way that their life cycle is as long as possible, and in the end, they are reusable and recyclable. In other words, we need to "design out waste". We cannot afford to enable unsustainable products to enter the market, such as products designed to break down after a certain time just to force consumers to buy a new one. Ecodesign regulation needs to set clear and ambitious standards for the durability, reusability, reparability, upgradability, recyclability, resource and energy efficiency, and non-toxicity.

Another important piece of EU legislation currently under the Parliament consideration is the revision of the Construction products regulation. Buildings and construction constitutes around 40 percent of the Union energy consumption and around 50 percent

of the Union material consumption, making the sector a key one in reaching the EU climate and biodiversity goals, and to ensure the transition to circular economy. Like in Ecodesign directive, the overall environmental impact of construction products needs to be assessed throughout their life cycle. This information shall also be available for consumers, recyclers, repairers, and re-users in a form of product passports. We need to set clear standards to harmonise our circular construction product regulations, to facilitate the development of the common European market for construction products and to enable green materials and production methods to get ground.

The EU economy needs to be fully respecting our planetary boundaries by 2050. This is essential in order to reach EU climate and biodiversity goals, and the strategic autonomy. A paradigm shift to transition from a linear economy to climate neutral, resource efficient, closed-loop circular economy is a way to get there. However, we do not have unlimited time and the change needs to accelerate. The window of opportunity is short - less than 30 years. During this time, we need to multiply our efforts and increase resource efficiency tenfold. We need produce the same welfare for people, better competitiveness for our industries and profits for our companies with a tenth of the resources we are currently using. We are in a hurry, let's not waste any more waste.



ALIX CHAMBRIS

Vice President Global Public Affairs and Sustainability, Viessmann Group

Flipping the script in buildings and heating: from resource depletion into regenerative business models



When I arrived in Brussels for my first job in 2004, the circular economy was already on the agenda. Almost twenty years and three EU action plans later, it is still a topic that drives political attention. Yet, I have learned in my career that what matters in policy making is not so much new ideas but their crystallisation. When a number of factors simultaneously lead to a critical mass, society is ready to act. We saw it with the REACH regulation on chemicals, GDPR and recently the EU recovery plan (*NextGenEU*).

I believe that the time has come for an exponential transformation of the building and heating sector - flipping the script from resource depletion into regenerative, circular business models. And here is why.

Science has become mainstream: The impact of climate change is documented and visible, and so are biodiversity losses and resource depletion. The facts are stunning. The built environment accounts for 50% of all extracted material, 35% of the EU's total waste generation and over 30% of GHG emissions.

The exposure of the EU economy is salient: The Covid pandemic and the war in Ukraine have exposed the vulnerabilities of the EU value-chains - including extreme volatility of material prices and the EU's over dependence on strategic supplies. Nothing new in fact, but it is not possible to turn a blind eye to the problem anymore. When factories are closed for lack of supplies, when market shares are lost, when a recession looms because of inflation, the topic is propelled into the boards of all companies and heads of state.

Consumer preferences are changing: 94% of Europeans think that protecting the environment is important and 68% believe that

their own consumption habits adversely affect the environment (Eurobarometer, 2020). This is more than just a belief. We have seen in the aftermath of the war in Ukraine a significant shift in actual purchasing decisions, which have translated into significantly reduced gas boiler sales and a growth of renewable solutions.

New technologies now enable a systemic transformation: The digitalisation mega trend, especially data mining and system thinking, allow us to reach new territories, manage complexity, understand interconnections and build a much deeper understanding of value chains.

Yet, will the change be fast enough? As I write this article, humanity has already crossed six out of nine planetary boundaries (Figure 1).

We have one decade to flip the script and take a giant LEAP towards a net-zero, resource efficient economy. The ultimate goal is to operate within the "doughnut", an economic model designed by Kate Raworth¹. This means for companies and the building sector: operating in a safe and just living space in line with social foundations and the planetary boundaries. Today, the question of

¹ <https://www.kateraworth.com/doughnut/>

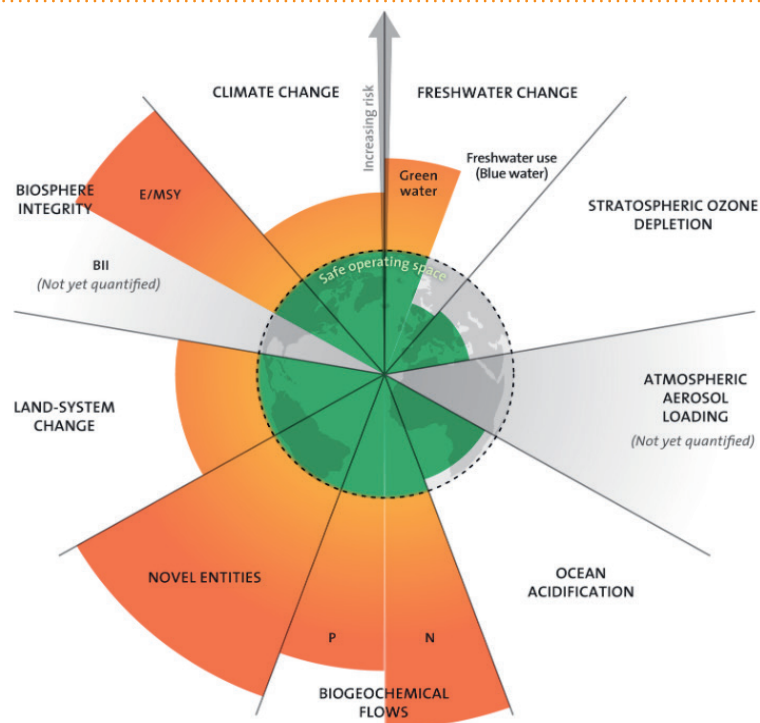


Figure 1: Planetary boundaries overshoot (Source: Azote for Stockholm Resilience Center, based on analysis by Wang-Erlandsson et al 2022)

board members and sustainability leaders is not *if and why* anymore, but *what and how*.

How to flip the script in practice? Here are a few thoughts.

Start with people: In heating for example, the accelerated transition is driven by the 1.5 million installers who install and modernise heating systems across Europe every day. The European Heating Industry (ehi) estimates that 50% of the existing workforce needs upskilling, and 50% more must join to meet climate goals.² 90% of consumers follow the advice of installers entirely or partially (Centerdata, 2021). Skills will clearly be THE currency of this exponential decade. With that in mind, ehi and Viessmann have joined the *EU Pact for skills*. Culture will be another strong driver, especially extreme ownership, courage and stubborn optimism.

Face reality: Today, the number one priority remains CO₂ emissions. 90 to 99% of GHG emissions of heating appliances come from the use-phase³. These emissions will gradually move to zero along the decarbonisation of energy systems, making the embodied cradle-to-gate footprint more important. In addition, the resources of the planet are limited, their prices are volatile and access is not guaranteed, especially for some critical materials. Clearly, our resilience and competitiveness depend on our ability to decouple growth from resource consumption.

Get the data: A first step to improve product design is to fill the data gap on the life cycle of products and services. This includes data on the flow of materials, components and electrons (i.e. the energy consumed in mining and extraction, refining and manufacturing, selling and servicing) and on the working and living conditions of stakeholders along the value chain. A priority is to mainstream life cycle assessments. It is identified as a critical enabler in the New European Bauhaus initiative and Horizon Europe. In short, know your electrons and molecules (Figure 2).

Build partnerships and go circular: The total emissions of our suppliers are 40 times higher than our own (scope 1 and 2) emissions. This makes partnerships with suppliers a key change lever. Heating appliances consist mainly of metals and alloys such as steel, copper, brass, and aluminium that account for 90% of an average product's

weight. Close to 100% is recovered at the end of life and their average life duration is already quite long: 20 years on average with big discrepancies among Member States. The actual problem remains the optimisation of their energy performance in the use-phase and the replacement of old, obsolete systems. However, there is still room for improvement. By reusing, remanufacturing, repurposing some components or materials from legacy products we could tap into valuable secondary resources. This will take some time and experimentation, yet what matters is to start⁴.

Enable consumers to make informed decisions: Consumers themselves can take an active role in the transition if they get reliable information on the environmental footprint of products. Transparency, consumer protection and fair competition, guaranteed by market surveillance, will be key enablers for the market take-up of innovative solutions. The ongoing revision of the directives on consumer rights and unfair commercial practices, combined with information requirements under the framework of the new ecodesign regulation for sustainable products, are necessary to improve the quality and reliability of green claims.

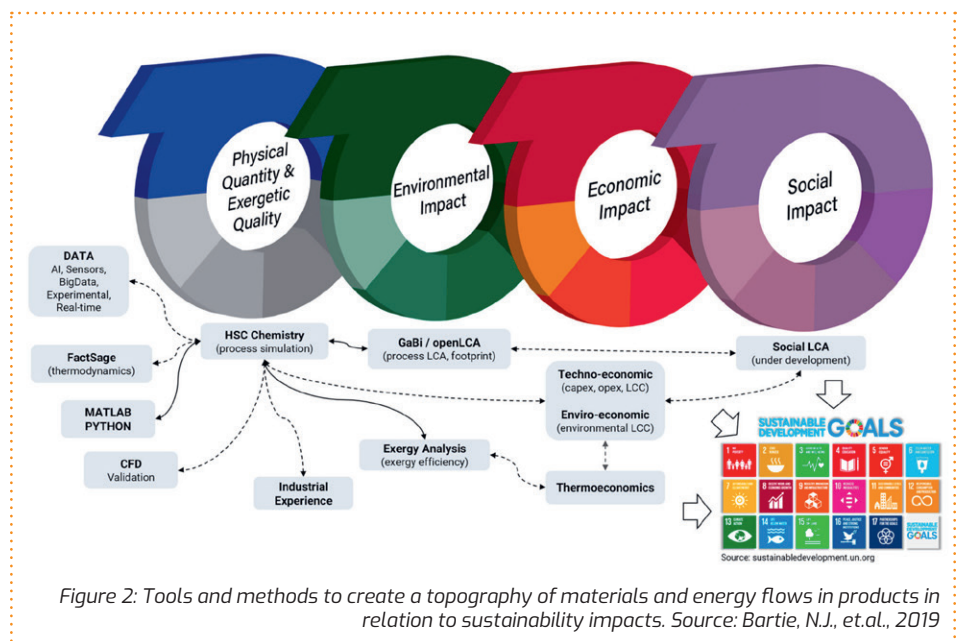
Lift barriers and scale: One substantial barrier is the transparency gap within companies themselves. I believe that the new Corporate Sustainability Reporting Directive, Taxonomy, and the upcoming Corporate

Sustainability Due Diligence Directive will have a transformative effect on companies. Another barrier that remains to be lifted is the dual treatment between conventional sales models and heating as a service models (where products are not sold anymore, but their functionalities). In some Member States, VAT rebates for green products apply only to conventional purchasing transactions, but not to *heating as a service* providers, like *Viessmann Wärme* for instance. This dual treatment is anachronistic and harms the market take-up of such business models. The EU could clarify, in its upcoming guidance, that state aid rules do not prevent the application of reduced VAT to green business models.

It can be frightening to look at the transformation that lies ahead. We don't know for sure all the answers, we are not yet sure how to reach our own targets and we welcome every partner to join forces and help. Yet, it is our responsibility to dare and imagine other business models and enabling policies.

Those who understand the shift, the early movers, will benefit the most. After all, climate solutions and circular business models are among the biggest business opportunities in our century, just waiting to be unlocked. It is estimated that the achievement of the SDGs by 2030 can generate \$12 trillion and 380 million jobs globally (UNDP).

⁴ as exemplified in Bocken, N., Konietzko, J., *Experimentation capability for a circular economy: a practical guide*, Journal of Business Strategy, 2022



² *Heating systems installers, expanding and upskilling the workforce to deliver the energy transition*, ehi, 2022

³ *Ecodesign preparatory study on space heaters*, task 5 report, page 25, VHK, 2019

Figure 2: Tools and methods to create a topography of materials and energy flows in products in relation to sustainability impacts. Source: Bartie, N.J., et.al., 2019



TUDY BERNIER

Senior Policy Manager at CO₂ Value Europe

Walking on two legs: mitigating climate change also means building carbon circularity with CCU technologies

The European Union (EU) made unprecedented progress in recent months towards adopting major climate legislations enabling the slashing of greenhouse gas (GHG) emissions by 55% by 2030. But the Intergovernmental Panel on Climate Change (IPCC) insists that carbon will remain a key building block for chemicals, fuels and materials, underlining our collective goal should not only be to decarbonise production processes, but to defossilise our economy: how can we defossilise hard-to-abate products that are essential to the functioning of society? Part of the answer is carbon circularity: mitigating climate change means reducing CO₂ emissions, but also moving away from a linear system where we extract, produce and pollute – and towards a circular system where we avoid emissions, reuse emissions and displace fossil carbon. The good news is we have already the means to do so. Carbon Capture and Utilisation (CCU) can contribute to both reducing carbon emissions and building carbon circularity.

Climate change is accelerating. The latest IPCC report is clearer than ever: GHG emissions must drastically decrease now and our dependency on fossil resources must end.

Against this background, Europe is moving forward on its climate neutrality journey: the Fit-for-55 package is progressing towards interinstitutional negotiations, and all EU institutions – Parliament, Council of the EU and Commission – are keen to build on this ambitious set of legislations to reach their climate goals. But the EU needs not to neglect that climate action and circularity are intertwined and support investments into projects that lead to defossilisation.

'All hands on deck': climate action requires deploying a wide range of low carbon solutions

The IPCC insists that addressing climate change means mobilising several levers at

the same time: phasing out coal production; reducing oil and gas dependency; deploying renewable and low carbon energy solutions; ensuring products can be repaired and avoid wasting resources. But while reducing emissions at the source is the most efficient solution to mitigate climate change, with current infrastructures and technologies, some sectors (e.g. cement, steel, aviation, maritime...) will not be able to reduce their emissions fast enough to meet global climate ambitions.

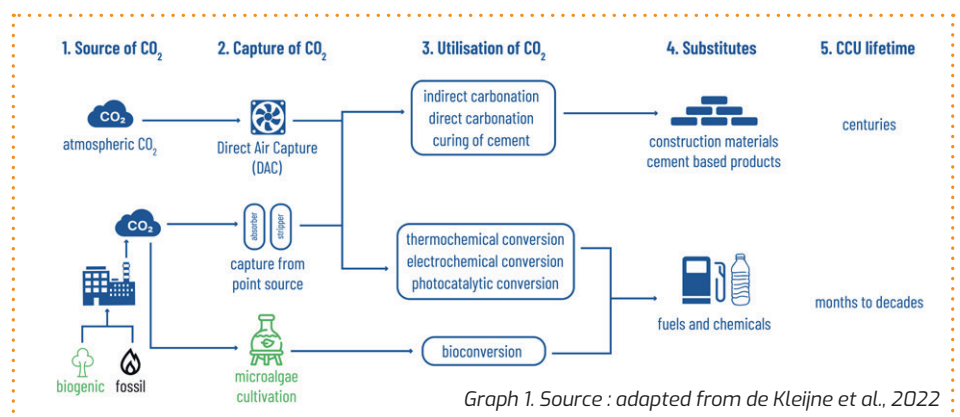
This is why a systemic approach for climate action is paramount. Europe needs to mitigate fossil extraction and emissions, with policies built around:

- **Avoiding carbon emissions**, by using renewable energy to replace fossil energy
- **Reusing captured carbon** (industrial or atmospheric) into products that **displace fossil-carbon equivalents**
- **Removing carbon**, by storing permanently emissions (either biogenic or directly captured from the air) into building materials

energy supply to cover their energy needs and thus reduce avoidable emissions from fossil energy use directly at the source. But for remaining unavoidable process emissions, they need to complement those actions with other levers, like storing CO₂ emissions, or reusing CO₂ emissions to valorise them – the latter is what we refer to as Carbon Capture and Utilisation, or CCU.

CCU as a tool to simultaneously reduce CO₂ emissions and create circularity

CCU is a broad concept that include all technological and industrial processes that capture carbon from industrial emissions (including biogenic) or directly from the air and convert it into products that can replace fossil-based products, both energetic and non-energetic, like fuels, plastics or construction materials. The climate impact of CCU depends on the product lifetime, the energy required for the conversion, the product it displaces, and the CO₂ source, as shown **by graph 1**. Depending on the pathway followed, CCU can lead to emission reductions, emission-neutral products or even carbon removals.



Graph 1. Source : adapted from de Kleijne et al., 2022

In practice, it means that for energy-intensive industries to reach climate targets, they must invest into switching to renewable

CCU has three essential functions:

- Helping to defossilise production, by replacing fossil carbon

- Building carbon circularity, by ensuring that unavoidable carbon emissions from one sector can be used as alternative carbon feedstock for another
- Contributing to building a circular economy by reusing waste and transforming it into products that bind CO₂ permanently

CCU helps reduce CO₂ emissions, it reuses waste to give it a second life, and it makes carbon more circular, in a variety of sectors and industries:

- **Energy:** the IPCC reports that *"in the near future, global CO₂ utilisation potential for fuels will be limited to 1–4.2 GtCO₂yr⁻¹, but could increase by the mid-century depending mainly on the development of a favourable policy framework"*. CCU produces drop-in renewable and low carbon fuels which can replace fossil fuels in a variety of applications (energy-intensive industry, aviation, maritime...)
- **Chemicals:** the IPCC report also refers to studies showing that *"CCU has the technical potential to decouple chemical production from fossil resources, reducing annual GHG emissions by up to 3.5 Gt CO₂-eq in 2030"*. It means CCU can help to defossilise (rather than decarbonise) hard-to-abate products like chemicals
- **Construction:** studies show that *"all considered CCU technologies for mineralisation could reduce climate impacts over the entire life cycle based on the current state-of-the-art and today's energy mix. Up to 1 Gt per year of the cement market could be substituted by mineralisation products"*³. CCU enables to create a double circularity for gas and solid waste recycling via CO₂ mineralisation, but also

to replace fossil fuels to fire e.g. cement kilns

Those different applications show that CCU is crucial for avoiding fossil carbon, displacing fossil carbon, and for building circular systems.

But to do so, CCU needs the right framework and support. EU institutions have promoted CCU in many legislations – by incentivising the binding of carbon in construction products in the ETS revision, by setting quotas for the use of CCU fuels in REDIII, ReFuelEU Aviation, FuelEU Maritime, or by promoting the use of renewable carbon in chemicals and plastics in the Sustainable Carbon Cycles Communication.

Recent declarations from EU officials tend to describe CCU technologies as a necessary transitional solution to reduce emissions, but only in the short to medium term, arguing that valorising emissions would only mean delaying them. The underpinning idea is that CCU does not contribute to reducing emissions, because in some CCU applications, the CO₂ is eventually emitted, often benchmarking CCU to the linear approach of CCS, where CO₂ is geologically stored.

But benchmarking CCU to CCS is not correct: CCU should not be assessed only looking at the duration or the storage capacity in a product, but rather with a comprehensive life-cycle analysis of the CO₂-based product generated and its comparison to its fossil counterpart. Through avoidance and displacement, CCU contributes to ending a linear vision of the economy, and building industrial symbioses – enabling cooperation between CO₂ emitters, CO₂ converters, end-product users – to reduce emissions across the board.

CCU is neither a stand-alone solution nor a silver bullet to mitigate climate change. CCU is meant to defossilise production systems, and needs to be rolled-out hand-in-hand with other low carbon solutions and climate actions – electrification, energy efficiency, sobriety efforts, etc.

Climate neutrality will be circular, or it will not be

Climate neutrality means breaking up with the fossil civilisation, which takes root in a linear approach: extracting fossil resources, exploiting them, transforming them into products, and throwing them away. CCU can contribute to changing this paradigm by reusing carbon from unavoidable emissions, and by reusing existing waste to sequester carbon.

As an example amongst many others, one illustration is the circular footpath built with Carbstone clinkers in Ghent (Belgium)⁴. These were made using the Carbstone technology developed by VITO together with the company Orbix. The bricks are made by allowing residual products from steel production (steel slags) to react with CO₂. It means that no new raw materials are used, and that CO₂ is permanently bound, with 1 m³ of Carbstone bricks storing a net 350 kg of CO₂.

Investing into carbon neutrality requires investing into circularity. EU policy-makers should make sure to break down silos between climate and circular economy legislations. For example, the revision of waste rules at EU level should include climate targets ; the Sustainable Products Initiative should include binding targets for CO₂-based products.

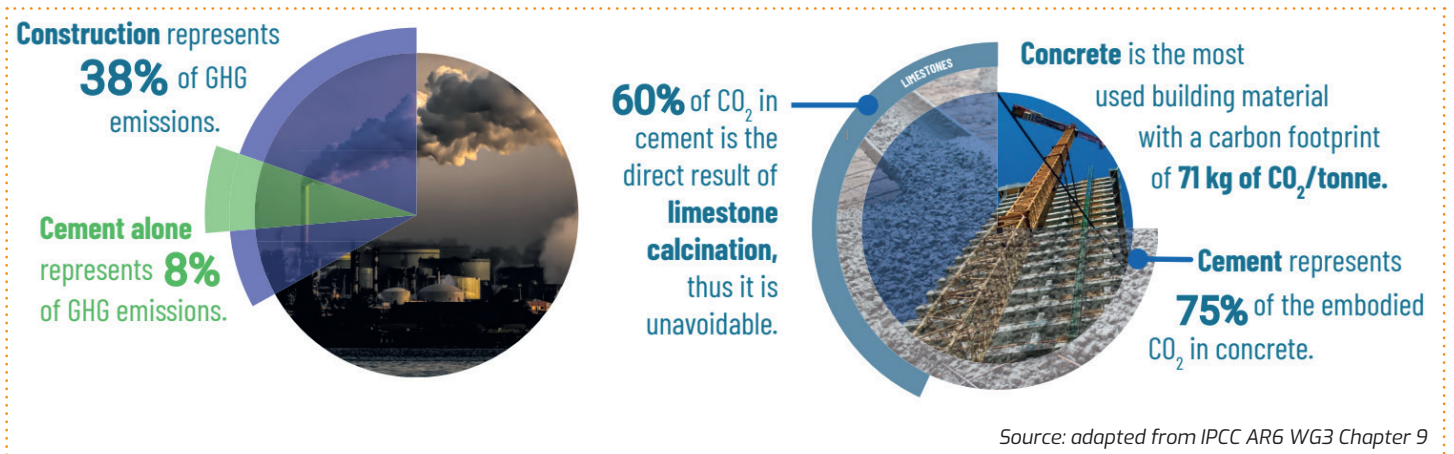
The endgame is clear: we must create virtuous ecosystems to help restoring sustainable carbon cycles, enable for renewable carbon to be used as alternative feedstock and putting fossil resources to rest. CCU can help us walking on two legs: building both a circular and climate neutral European society.

⁴ <https://vito.be/en/news/first-footpath-constructed-carbstone-clinkers>

¹ Source: IPCC AR6 WG3 Chapter 6

² Source: Kästelhön et al. (2019) / IPCC AR6 WG3 Chapter 11

³ Source : Ostavari et al., 2020, Di Maria et al., 2020, Hills et al., 2020



**DELARA BURKHARDT**

*MEP (S&D Group – Germany),
Member of the ENVI Committee*

Ready for **Circular Economy**: Turning textiles inside out

Textiles are our second skin, whether it is your favourite T-shirt or a cushion on the sofa, they surround us every day and everywhere. A daily life without textiles is not imaginable.

Today the fashion industry presents itself like a dream, with beautiful photos, glamorous catwalks and promising claims. However, on closer look, the dream shatters. Moreover, the reality shows one of the most polluting and inhumane industries in the world.

To a large extent Europe's current economic model is based on a 'take-make-consume-dispose' pattern of growth. This linear model is based on the assumption that resources and energy are abundant, available and cheap to dispose of. This is especially the case for the methods of the fast fashion industry.

The global textile and clothing industry is currently responsible for 92 million tonnes of waste annually. An industry mainly driven by fossil fuels. In 2015, we consumed 98 million tonnes of oil just for the fashion industry. Mostly for the production of synthetic fibres, which account for a large proportion of the materials used. It is estimated that there are already 1.4 trillion microfibers in the oceans. The washing of synthetic fibre clothing accounts for the largest share of all, 35%. Every year, 552,000 tonnes of microfibers alone end up in the water.

We are producing more clothes and textiles than ever before. In the EU alone, demand has increased by 40% in recent decades. We consume more and more often than ever before. At the same time, we only wear our clothes a few times on average. We forget how much work and resources are used. More collections than there are seasons, faster trends and before the new collection is in the shops and websites, yesterday's collection is incinerated. At the same time, only 1% are recycled.

However, not only the environment pays its price, but also the people who produce our textiles along the entire supply chain.

The industry employs 60 million people worldwide, most of them women. The wages of garment workers are often far away from living wages. Unpaid overtime, health hazards, no fixed contracts, psychological and physical abuse are just some of the problems in the industry. Regardless of whether it is in the cotton field or in the textile factory, precarious working conditions dominate. All over the world, women are hit particularly hard by environmental disasters and climate extremes. We cannot cope with the worst crisis in the world without involving half of its population.

The constant downward pressure on social and environmental standards is leading to more and more social inequalities and environmental devastation. The circular economy must play a major part in managing the transition towards social, economic and environmental sustainability.

Without a functioning circular economy, we cannot achieve climate neutrality and thus stop climate change. We therefore need binding rules, which guarantee a responsible use of our raw materials worldwide.

We as the EU must lead by example and ensure that the textiles sold in our shops, guarantee high environmental and human rights standards.

The responsibility for sustainable purchasing should no longer be shifted to consumers alone, but the existing linear model must be stopped - towards a circular and decent model that does not rely on volume.

For this, we need binding legislation, because so far the textile industry has been left relatively untouched by lawmakers.

Therefore I call for European legislation, which guarantees that fashion is not produced

at the cost of environmental destruction and human lives.

Legislation that prevents unsold clothes from being shredded or sent to landfill just because they are no longer in fashion or the warehouse is full. Only textiles that meet a minimum standard of sustainability requirements should be imported into the EU or produced within the EU. We need to design textiles reusable, repairable, recyclable and energy efficient. Therefore the EU has to set binding targets for the reduction of its carbon footprint. One core problem is overconsumption and overproduction. A holistic strategy for sustainable textiles can only be genuine, if we reduce the absolute quantity of natural resources and on the same time reduce the quantity of waste. In concrete terms, this means that we can recycle as much as we want, but if we do not address the overproduction of textiles, we are only scratching the surface.

I call for legislation that prohibits inhumane workplaces - also here in Europe. To ensure this we need decent wages, fair working hours, healthy working conditions, binding employment contracts, freedom of association and a right to collective bargaining.

With the European Green Deal and the EU Strategy for sustainable and circular textiles, we now have the chance to decide whether sustainable clothing will only be a lifestyle for a certain group of people, or whether it will become the norm.



JORI RINGMAN

Director General Cepi, the Confederation of European Paper Industries

For Europe's manufacturing, a **circular bio-economy** should not be a problem to regulate but a **transition to encourage**

Bioeconomy and bio-based materials greatly facilitate the emergence of a circular economy. They typically address the limits of our current economic model and some of circularity's 'hard problems'. Other global players are already moving to make the best of it. So should the European Union. One ubiquitous actor of both the bio- and circular economy is paper. An essential biomaterial, made of wood fibres, which manipulability has emboldened many manufacturers to progressively wander to new product markets. Some are now well established, from hygiene to packaging, or rapidly growing, such as textile. Other categories of products are ready to play a key role in the near future, for example biochemicals or batteries integrating lignin, a plant-based material into their components.

A real champion of both the bio- and circular economy is paper, an essential bio-based material made of wood fibres. Those wood fibres, and by-streams of making paper, can do so much more, in so many product markets. Some are now well established, from hygiene to packaging, or rapidly growing, such as wood-based textiles. Other categories of products are ready to play a key role, for example biochemicals for food and pharmaceuticals, or EV batteries integrating lignin also extracted from wood into their components.

Paper producers are also champions of industrial symbiosis, by-streams and residues from timber production are a major raw material source for papermaking. Our own residues are useful for green chemicals and lignin applications. And papermaking also integrates in many local communities as a provider of heating and water regeneration for many European homes.

What bioeconomy can do that others cannot

Paper is circular by nature. Made of renewable wood fibres, it is designed for circularity since decades already. As a packaging solution, it is already exceeding, many years ahead, the legal targets set in the Packaging and Packaging Waste Directive, and alone is recycled as much as all other packaging materials combined. This would not happen of course without the efforts of consumers, who are on the front-line of source-segregated paper collection, the basis for a high-quality circular-economy. For paper, the buy-in of citizen-consumers is already here.

The recycling of paper – like the paper industry in general - is very much "made in Europe". Although in an open global market we cannot avoid third countries tapping into our paper collection, European paper recycling has been steadily growing over the past three decades, surpassing 50 million tonnes in 2021 for the first time. What is the incentive for this? While circularity often bumps into the issue of finding a business model, paper-makers recycle because this is part of how the model works. We have consistently invested in collection, in recycling capacity and in developing world class recycling technology. And we pay an attractive market price to get the used papers back to our production – something that generates vital revenues for local authorities, waste management and traders.

Recycling and circularity for us is an economic necessity, rather than an element of regulatory compliance. This is a way of thinking that many other materials still have to fully integrate, but it is part of our sector's DNA. By zeroing-in on make products circular and sustainable by design, and pushing for better collection practices at local level, our sector aims to reach even higher recycling rates. The goal is to make all paper packaging

in Europe recyclable by 2025 and reach a recycling rate of 90% by 2030.

But circular economy has limits. Any product can be 100% circular, but not all products, not the whole economy. Why? There are unavoidable losses of material in use, collection, sorting and reprocessing.

#Green Source
Responsible products start with a green source

FOR MORE INFORMATION
eugreensource.org

It grows annually by about **6** (Net)

The total volume of Europe's forests is approximately **28 Billion m³**
Growing stock in forests and other wooded land: 28,162,000 m³

Wood sap is used in cosmetics, syrups & beverages

Leaves are used for essential oils & natural fabric dyes

Young growing trees absorb the most CO₂

NOTHING IS WASTED

Trees are a source of more than **5000 Products** including advanced materials

And EU still wishes to grow and export as an economy. So you cannot collect from yesterday's consumption enough to meet the needs of tomorrow. The material pool of the circular economy needs to be constantly replenished and it should not be done with the fossil-intensive materials of the past if we want to achieve also our climate goals. Bioeconomy and the circular economy are highly synergetic. Bioeconomy, even if materials are renewable, cannot be wasteful but needs circularity for being sustainable; Circular economy alone would not work and needs to be paired with a transition to a bioeconomy.

The circular bioeconomy is a global market

In September, United States President Joe Biden signed an Executive Act on 'Advancing Biotechnology and Biomanufacturing Innovation for a Sustainable, Safe, and Secure American Bioeconomy'. This piece of legislation is based on the premise that the global bioeconomy will reach USD 30 trillion by 2030. That is one third of the global economy.

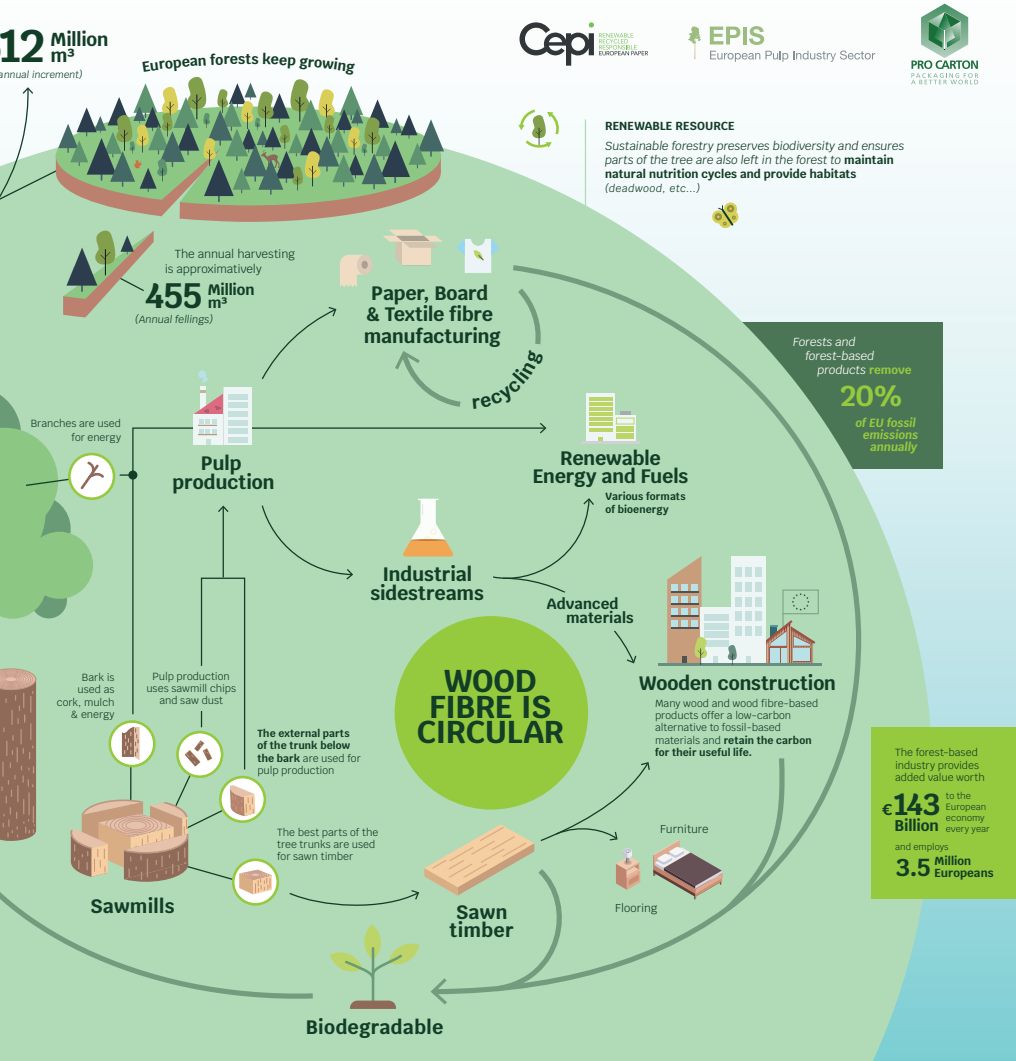
Positioning the United States as a key player in this future economy will now be a goal supported 360 degrees across federal agencies, with appropriate funding being earmarked for research and innovation, and plans to develop suitable skills within the workforce. Standards will have to be fit for the bioeconomy, biomass access will be secured, and bio-based products will be given preference in public procurement. President Biden also sees the bioeconomy as an element of national security policy – a perspective the EU is only now waking up to see.

Yet in this global competition the European Union still has many key advantages, ones it should build on if it wants to reach its objectives in transitioning to both a circular economy and a bioeconomy. In the paper industry, we have a solid base of research and innovation, a well-educated workforce and with our 139 wood-based biorefineries a great industrial base. These already provide green and resilient solutions for a variety of sectors, from aviation to civil construction, food, automotive and batteries, cosmetics, personal hygiene, electronics, pharmaceuticals and

medical applications, furniture, chemicals, and textile.

This is just the beginning of the circular bioeconomy of the future. We could make even further space for climate-neutral and circular wood-based products in our daily lives. We should also ensure that these products continue to be manufactured here in Europe, by a home-grown industry. To achieve this the EU Green Deal will now have to support their scale up; it was, after all, the EU's growth strategy.

Reaching climate neutrality will also require acting systemically, across value chains and sectors, which is why we founded a cross-industry alliance, 4evergreen. Its aim is to boost the contribution of fibre-based packaging in a circular and sustainable economy that minimises climate and environmental impact. The 100 members of 4evergreen represent some of the largest companies worldwide. This again shows Europe's potential for global leadership in the current circular and bioeconomy transition. The bioeconomy and the circular economy's futures are interlinked, and they could be written here, in the EU. We cannot miss this opportunity.





HUGO-MARIA SCHALLY

Adviser for International Negotiations in DG Environment, coordinates, and serves as EU lead negotiator in the negotiation for a Global Biodiversity Framework under the Convention on Biological Diversity and its Protocols and for a new Global Agreement on Plastics.

Circularity of global plastics value chains – combining environmental ambition with economic opportunity

There has always been the perception of tension between the objectives of protecting the environment and society's ambition for growth and prosperity as already expressed in the so-called "Brundtland Report"¹ prior to the World Conference on the Environment in Rio de Janeiro in 1992 (UNCED 1992).

In reaction to increasing pressure on the earth resources the concept of the Earth's ecological boundaries was developed² putting forward the basic idea that our planetary system needs to find a so-called "safe space" in which society can meet its needs without sudden or irreversible changes in the environment.

Against that background the European Commission presented an EU action plan for the transition to a circular economy in 2015.³ This plan aimed at the transition to a circular economy in the EU proposing measures covering the whole life cycle of products and materials.

That was to be the starting point for moving away from a linear economic model that is highly resource-intensive and which is inappropriate both from an environmental sustainability perspective, and from an economic point of view. The transition to a circular economy is a means to strengthen European competitiveness by reducing the scarcity of resources and price volatility of raw materials and by creating additional incentives to develop new business models.

In 2018, the Commission adopted a comprehensive package of measures in the field of plastics and chemicals,⁴ aiming at transforming the way plastics and plastic products are designed, produced, used, and recycled so that Europe could start the transition towards a new plastics economy. While the focus was on domestic action it was already clear at the time that opportunities and challenges linked to plastics are global and addressing them would require action at the international and global level.

Under the new Commission taking office in 2019 the work on circular economy continued and the Commission presented a second Circular Economy Action Plan in March 2020.⁵

Since then, the European Commission has - in a dense sequence- put forward proposals highly relevant for the plastics sector such new rules on shipments of waste, a new Eco-design Regulation, a revised Construction Products Regulation as well as an EU strategy for sustainable and circular textiles.

Proposals on microplastic pollution, on bio-based, biodegradable, and compostable plastics and for a revision of the requirements for packaging and packaging waste in the EU are planned for the near future. This creates an increasingly complete regulatory framework aimed at providing a level playing field for the economy as well as a facilitating environment for the transition to a more circular economy. It is also clear, however, that the transition to a circular plastics economy will not be achieved through Commission packages alone; the transition requires a joint effort by all. There is a need to mobilise all actors in the European Union, including Member States, regional and

local authorities, businesses, and NGOs. The role of local and regional authorities is of utmost importance. Business and civil society initiatives are essential for the continued success of the joint efforts to move towards a circular economy in Europe and globally as this cannot be done in Europe alone.

The EU is therefore active internationally in the field of the circular economy, initiating and supporting proposals in international negotiations. At global level, the EU has created an alliance of states and stakeholders working together to promote the circular economy, the so-called Global Alliance on Circular Economy, and Resource Efficiency (GACERE).⁶ The EU also supports the extension of controls on hazardous waste, materials, and chemical substances in multilateral environmental conventions. A further concern for the EU since the adoption of the European Plastics Strategy in 2018 has been to enshrine the principles of the circular economy at global level in the context of a global agreement to combat plastic pollution. The EU has played a crucial role in taking a decisive step forward at the 5th session of the World Environment Assembly in Nairobi (UNEA 5) in March 2022. UNEA has a decisive role to establish an International Negotiating Committee (INC) to negotiate an agreement by 2024.⁷ The first meeting of the INC will take place at the end of November.⁸

These political and policy developments domestically and at the global level present a unique opportunity to continue the transition and to complete in an international environment, together with our partners.

1 Our Common Future, Report, from the United Nations World Commission on Environment and Development. Oxford University Press, 1987, Oxford University Press

2 'Planetary boundaries: Guiding human development on a changing planet'. Science. 347 (6223): 1259855

3 Closing the loop – An EU action plan for the Circular Economy. Closing the loop, Brussels, 2.12.2015. COM (2015) 614 final.)

4 http://ec.europa.eu/environment/circular-economy/index_en.htm

5 Communication from the European Commission, A new Circular Economy Action Plan – For a cleaner and more competitive Europe, Brussels, 11.3.2020, COM (2020) 98 final

6 https://ec.europa.eu/environment/international_issues/gacere.html

7 <https://www.unep.org/news-and-stories/press-release/un-environment-assembly-concludes-14-resolutions-curb-pollution>

8 <https://www.unep.org/events/conference/international-negotiating-committee-meeting-inc-1>



TIM FORSLUND

*Specialist, Sustainability solutions,
Finnish Innovation Fund, Sitra*

Only through an accelerated transformation of how we produce, consume and manage products and materials can we get to the heart of today's systemic planetary crises and build a more resilient Europe. A new study captures the opportunity.

The 2020s had just started when the world was plunged into a series of tragedies, from a pandemic to an illegal invasion of a European nation, causing indescribable suffering and existential threats many thought unthinkable in today's world. At the same time, our triple planetary crisis of biodiversity loss, climate change and pollution has only increased in intensity, as record deforestation, droughts and floods have succeeded one another from Brazil to Germany and China.

This crisis is largely a result of today's linear and extractive economy, which is one of both haste and waste. In Europe, materials are on average used only once. According to the International Resource Panel, as much as half of greenhouse gas emissions and 90% of land-use-related biodiversity loss is due to resource extraction and processing – more than 80% due to biomass. Another adverse effect of this high-throughput and resource-intensive economy is an excessive exposure to disruptions in supply chains, commodity markets or geopolitical tensions.

By contrast, the circular economy presents a vision of a more resilient system in which we regenerate our fields and forests – and get more value from existing resources. Waste is designed out at the outset, and products and food are made with lower material inputs, for longer lifetimes and active use. This allows us

Europe should step up its circular transition to tackle global biodiversity loss

to use fewer resources, leave room for nature to thrive and store more carbon in the soil.

The study "Tackling root causes – [Halting biodiversity loss through the circular economy](#)" by the Finnish Innovation Fund Sitra captures the opportunity by focusing on the four sectors with the largest impacts on global biodiversity loss – the food and agriculture, construction, textiles and forest sectors. A circular transition across these four sectors could free up considerable land areas, making it possible to halt global biodiversity loss and enable a recovery to 2000 levels of biodiversity already by 2035. Agricultural land corresponding to 1.5 times the size of the EU could be freed up by 2050, while forests the size of Argentina could be spared – largely in some of the most biodiverse areas on the planet.

The food and agriculture sector has the largest potential, made possible by regenerative agriculture, by halving food loss and waste and by shifting to less input- and animal-intensive protein sources such as plant-based, myco- and lab-grown proteins. In the EU alone, this transition could slash methane emissions from agriculture by almost 90%, while the Commission's revised proposal of net removal of 310 Mt CO₂ per year from land use, land-use change and the forest sectors could be met by 2030.

The EU is leading the transition with its comprehensive European Green Deal, to transform Europe's economy. As one key leg, the Circular Economy Action Plan addresses seven key product value chains. However, the circular economy plays a larger role as a solutions framework, not least in the bioeconomy, by reducing waste and by steering production of Europe's limited biomass supply towards more high-value and long-lasting products and by driving regenerative outcomes both

on fields and in forests, through a greater mix of species and improved soil management methods. Going beyond the EU's Farm-to-Fork Strategy's 20% reduction target, Sitra's new study projects a 30% reduction in nitrogen fertilisers onto croplands. This is topical as the price of urea has increased by over 200% since 2020, according to World Bank data.

The circular economy also has a key role in how we design food products, not least by reducing input needs and energy waste from animals. In the wake of the Russian invasion of Ukraine, the Commission has backed the creation of an [EU strategy on proteins](#). For such a strategy to be effective in building resilience, it is important that it does not forget human consumption of plant proteins, which could be further supported through minimum criteria for sustainable public procurement in the Sustainable EU food system initiative, and through more investments such as those made by France and Denmark.

Finally, the circular economy represents a systemic transformation. Feedback from one intervention must be studied across the system at large. For example, in many European countries, most biodiversity loss occurs not within their own borders, but it is outsourced, due to a small number of products. EU's new rules addressing deforestation-related supply chains are important, but to be most effective, leakage due to new demand elsewhere must be taken into account.

By reducing waste and designing altogether new food products, the circular economy plays a complementary but underappreciated role, by reducing the total pressure on nature from our consumption. This and more will be discussed at the World Circular Economy 2022 takes place in Kigali, 6-8 December, days before COP15 in Montreal.



NICOLÓ GIACOMUZZI-MOORE

CBE JU Executive Director ad interim

A competitive bioeconomy for a sustainable future

Can Europe move to a low-carbon economy in which new green jobs bring life back to regions and their environment? Is there a way to safely produce food, everyday products and energy locally, cutting long supply chains and reliance on imported ingredients?

For 10 years, European bioeconomy stakeholders have been working on these challenges with the support of [CBE JU](#) - Circular Bio-based Europe Joint Undertaking, a public-private partnership that funds projects deploying competitive bio-based industries in Europe.

These industries produce sustainable bio-based ingredients, materials, and products from renewable resources, including agriculture, the food industry, wood sidestreams and waste, replacing the existing, non-renewable and often imported sources of raw materials for fuel, energy and manufacturing.

The goal of CBE JU is to help Europe become the world's first climate-neutral continent while increasing the sustainability and circularity of production and consumption systems. By combining public and private investment, CBE JU helps reducing the investment risk in cutting-edge technologies while adding the skills and knowledge necessary to fulfil market demands. Projects supported by CBE JU must show a strong positive impact on the environment and cannot compete with food production.

The partnership's €250 million investment in 14 first-of-their-kind commercial-scale biorefineries across Europe has already attracted €1.3 billion in private investment and created nearly 20,000 jobs. Many of these are new, highly skilled jobs in remote, rural, and coastal areas where the biomass is sourced. All together, these first biorefineries are expected to reduce 800 KT of CO₂, equivalent to the amount captured by all Belgian forests in one year. What's more, each biorefinery's model can be replicated in other regions,

bringing great economic and environmental benefits to the local communities. Let's take a look at some of these biorefineries:

Afterbiochem

- › Saint-Avold, France
- › CBE JU funding: €20 million
- › Coordinator: AFYREN NEOXY, France

The EU is the world's largest producer of sugar beet. The sector currently counts 140,000 farming and around 27,000 processing jobs. The [AFTERBIOCHEM](#) project is building the first all-in-one biorefinery for transforming the sugar industry's sidestreams – mainly pulp and non-food waste – into bio-based molecules of industrial interest. This will increase the economic and environmental sustainability of the sugar beet industry. The process will be flexible enough to adapt to alternative feedstocks in the future.

Circular biocarbon

- › Zaragoza, Spain & Sesto San Giovanni, Italy
- › CBE JU funding: €15 million
- › Coordinator: Urbaser, Spain

The organic fraction of municipal solid waste and sewage sludge is still not efficiently recovered in most municipalities. The [CIRCULAR BIOCARBON](#) flagship project is building two first-of-their-kind biorefineries converting waste into four value-added products and a range of other intermediate products. The project's goal is to support a new innovative circular urban waste treatment business, to reduce the organic waste that currently goes to landfill and to cut methane and carbon dioxide emissions.

Exilva

- › Sarpsborg, Norway
- › CBE JU funding: €27.4 million
- › Coordinator: Borregaard AS, Norway

Why do we need to use fossil-based materials to absorb water when trees give us the most advanced water absorption technology? Now, we know how to use nature's wisdom! The [EXILVA](#) project found a way to substitute fossil-based chemicals in personal care, coatings, and adhesives with advanced bio-based innovations. This enabled a



AFTERBIOCHEM flagship project in Saint-Avold, France – ©Afyren Neoxy

significantly lower carbon footprint compared to existing technologies.

Farmÿng

- › Amiens, France
- › CBE JU funding: €19.6 million
- › Coordinator: ÝNSECT, France

Europe needs locally produced and sustainable plant-based proteins to reduce our dependence on protein imports. [FARMÿNG](#) produces sustainable proteins for animal feed with a lower environmental impact in the world's largest vertical worm farm. The project's appeal has propelled ÝNSECT, the French start-up leading the project, to raise more than €400 million and is planning to replicate the biorefinery in other locations.

First2run

- › Porto Torres, Italy
- › CBE JU funding: €17 million
- › Coordinator: Novamont SPA, Italy

In Europe, many lands are not suited for agriculture. Due to their topography or past use, marginal lands are often abandoned, whereas they could be used to produce renewable resources. The [FIRST2RUN](#) project involved local farmers to grow cardoons, an underutilised oil crop, in the Mediterranean landscape of Sardinia to make biodegradable and compostable bio-based products, such as bioplastics, cosmetics, and biolubricants, that are now well established on the market.

Lignoflag

- › Podari, Romania
- › CBE JU funding: €24.7 million
- › Coordinator: Clariant Produkte GmbH, Germany

Straw is a common waste of agriculture. The [LIGNOFLAG](#) project found a new way to use it its first biorefinery in the world producing bio-based ethanol from non-food resources. The product's carbon footprint is much lower than fossil fuels, as the greenhouse gas savings could reach up to 95%, and it can also be applied as a fertiliser for the crops used in the process. 300 local farmers are supplying the straw to the biorefinery which allows them to generate an alternative income source. New plants are already in the planning in other regions.

PEference

- › Delfzijl, the Netherlands
- › CBE JU funding: €25 million
- › Coordinator: Avantium Chemicals BV, the Netherlands

Europe is looking at ways to cut the alarming plastic pollution. The [PEference](#) project has built the first industrial-scale, cost-effective biorefinery producing FDCA, a bio-based chemical, to produce high-value products. The goal is to replace a significant



LIGNOFLAG flagship project in Podari, Romania – ©Clariant

share of fossil-based plastics with 100% bio-based polyesters. These can compete with traditional packaging products in price and performance when produced at scale. The resulting bio-based material is sustainable and completely recyclable.

PLENITUDE

- › Sas van Gent, the Netherlands
- › CBE JU funding: €17 million
- › Coordinator: 3F BIO Ltd, United Kingdom

The European Union is by far the biggest importer of food worldwide. At the same time, there is an increased need for sustainable plant-based proteins. The [PLENITUDE](#) project has started the production of affordable plant-based proteins for human consumption. Their process reduces substantial amounts of CO₂ per year and consumes significantly less water compared to beef farming while using waste from agriculture as the main resource.

ReSolute

- › Saint-Avold, France
- › CBE JU funding: €11.6 million
- › Coordinator: Circa Group AS, Norway

The goal of the [ReSolute](#) project is to provide a biodegradable, harmless, and bio-based solvent alternatives to the fossil-based chemicals currently in use, all while using waste from pulp and paper industries as a renewable raw material. The resulting bio-based solvent produced in a repurposed old petrochemical site in France will have many applications, like pharmaceuticals, coatings, adhesives and electronics. This way, the European industry can employ solvents which are safer for human health and the environment in many cutting-edge industries like microchip production.

Scale

- › Baillargues, France
- › CBE JU funding: €14.3 million
- › Coordinator: Microphyt, France

What if we could grow renewable resources in very reduced space to free soil for forestry and agriculture? What if we could even capture CO₂ from the atmosphere to feed this resource? The [SCALE](#) project led by a French small business is building the world's first fully integrated microalgae biorefinery to produce natural active ingredients of high nutritional value for the food, food supplements, feed, and cosmetics sectors.

Sweetwoods

- › Imavere, Estonia
- › CBE JU funding: €21 million
- › Coordinator: Fibenol OU, Estonia

Lubricants, adhesives, and plastics are widely used materials, but they are made of fossil-based raw materials, contributing to global warming and pollution. [SWEETWOODS](#) is building a first-of-its-kind, highly efficient, industrial biorefinery with a reduced environmental impact to obtain high-value compounds using hardwood waste as a raw material. The project helps create a new industry and innovation hub in Estonia focused on forestry-based chemicals and materials.

Viobond

- › Riga, Latvia
- › CBE JU funding: €15.9 million
- › Coordinator: Latvijas Finieris A/S, Latvia

Wood panels use glues whose components - phenol and formaldehyde - may pose risks to human health. By transforming hardwood residues, this project demonstrates the feasibility of an effective and efficient business model for lignin transformation into harmless and sustainable bio-based resins for wood panels and construction materials. The [VIOBOND](#) project can be replicated elsewhere in Europe and has high market potential.



CYRUS ENGERER

*MEP (S&D Group - Malta),
Member of the ENVI Committee*

Ethics, Economics and the Environment: The case for phasing out plastic waste exportation

In 2018, the Chinese Government chose to ban the importation of Plastic after it found that the situation of importation into the country was becoming untenable and creating severe detrimental effects for the environment. In a nutshell, China declared that it refused to continue to be the world's "dumping ground" after it was found that most of the plastic being sent to the country was contaminated and difficult to recycle. China's message back then was clear - enough was enough.

However, this decision left exporting countries, especially those in the European Union, scrambling to find new destinations to export their waste to. This prompted OECD country Turkey to take over as Europe's main dumping ground for plastic waste. The situation became catastrophic with Turkey receiving around half of Europe's plastic in both 2020 and 2021. To put this in more concrete figures, before the Chinese Ban, Turkey imported 261,864 tonnes of plastic waste annually into the country. After the Chinese introduced their importation ban, annual imports increased to 772,831 tonnes by 2020.

Investigations into the environmental, social and human rights implications of such high volumes of shipments have shown that the vast majority of all waste ended up in landfills in lowest income areas of the country; burnt in incinerators; and as litter in the countryside or in illegal dumping sites.

Studies conducted into the matter found that roughly 90% of municipal solid waste produced in Turkey also ends up in landfills, leaving a very difficult situation for the country in terms of waste dumping and waste treatment. This situation becomes even more concerning when one considers that research shows that such plastic waste mismanagement is resulting in high levels of plastic leakage into the Mediterranean Sea, with Turkey estimating to contribute around 16.8%

of all European marine plastic pollution. This is the highest share of all countries contributing to the challenge.

Further to this, human rights NGOs have found that workers and people living in the surrounding areas of plastic waste plants, face severe health problems and that child labour was present in many of the dumping sites.

It is clear that this situation is not tenable and the fact that this has been allowed to happen is grave and an unethical stain on Europe's trade and environmental history.

This month in the European Parliament, we are also expected to say enough is enough. In the coming weeks, together with the rest of the negotiation team on the EU's Waste Shipment Regulation we will be proposing that the European Union phase out the exportation of plastic waste to non-EU and EFTA countries - a bold decision which will be our environmental legacy.

But as we all know too well, with great environmental ambition comes the heightened need to ensure that measures for mitigation of negative economic effects are in place. And the phase out of plastic exportation from the European Union is no different. The phase out will disrupt the system currently in place, so it is clear: the system must change.

But while protectionists will always argue that this will be the end of us, I argue that it is just the beginning. I am a firm believer that everything we know about plastic is wrong. In the sense that since its invention at the start of the 1900s, our approach to plastic has been wrong. We have always viewed plastic as something disposable, and temporary. Today we know how wrong we were, and we have tried in multiple ways to rectify this- most notably with the EU ban on single use plastics. But these high ambition measures cannot be done within a vacuum, and must be part of a broader approach which seeks to recognise plastic as the resource that it is, and seeks

to insist on better more concrete measures towards a more circular economy.

With a plastic export phase out, will come an increase of plastic in the European market: and thus, an increase of plastic within our shores that should be seen as a resource. We need to shift away from the utilisation of virgin plastics and we need to move towards a closed loop system which utilises the best available techniques and factors in content targets. It is only by implementing such a holistic system, that we could truly start to see effective and clear change in a system which needs to be disrupted.

Over the years, because of a lack of circularity within our resource production, with a use and dispose attitude, we have found ourselves in a situation where we are creating great harm to developing countries, and ultimately to our planet. These practices will eventually hurt us all, but currently those suffering the most on the frontlines of this challenge are third countries, and poor regions.

We have been exporting our challenges and dumping them on some of the most vulnerable people in the world and it is time that this ends; for the benefit of third countries, for the benefit of our economies which thrive from more resources and for the benefit of our planet, where dire action is desperately needed.



JOAN MARC SIMON

Executive Director of Zero Waste Europe

The critical role of reuse in the transition to sustainable production and consumption

It is today mainstream that an economic model based on linear production and consumption with decreasing returns in energy, financed by ever-growing debt is not sustainable. What many fail to grasp is that what this means in practice is that the era of unrestrained consumption is ending. We just cannot afford it, and neither can the planet.

So far, the strategy to improve sustainability has relied on stopping waste via collection and recycling. The EU is equipping itself with a good amount of policies to redirect waste away from landfills and incinerators and into the economy as secondary raw materials. Recycling is indeed vital for our future and we need more of it; unfortunately, current recycling rates for plastic packaging are only 17%, for non-packaging plastic household products 1%, for textiles 1%, for electronics 5%, for biowaste 11%.

The challenge, however, is that even if we manage to exceed the EU 65% recycling target by 2030 we would remain far from the level of resource performance needed to meet the 1,5% target of the Paris agreement. This is due to the high turnover of our economy; consumer goods become waste so quickly that even if we could collect and recycle it all, the amount of entropy generated would still be exceedingly wasteful. For instance, PET (polyethylene terephthalate, the most recyclable and recycled of all polymers) loses more than 25% of the material in every recycling cycle. That is; after 3 to 5 cycles there is no recycled content left in the new PET packaging... and given the short life-time of a plastic bottle this means that in less than one month there is no recycled content left in a plastic bottle, no matter how well we collect and recycle it. Since 1 to 1 recycling is not entirely possible, new raw materials are needed for every new cycle and hence, in a stable or growing economy, the overall

resource consumption and climate impact continues to increase. Circularity is important, but it's not enough!

On the other hand, prevention and reuse systems for packaging, when well-designed, preserve 100% of the material way beyond 10 cycles (some can go beyond 100 cycles before losing value). A similar logic applies to other product categories; for textiles and electronics, given the amount of resources that go into its production, the best way to save resources is to make the product last for as long as possible, pairing it with a strong refurbishing and reuse network. Finding a way to recycle textiles and electronic equipment is key, but in terms of environmental and economic impact nothing beats preserving the use value of resources for as long as possible. Design for durability, repairability, reuse markets, etc. are crucial to make this a reality.

The challenge at stake is both technical and societal. It is technical because the transition requires changing business models, building new infrastructures and redesigning investment flows. It is societal because it requires changing consumption patterns.

The technical challenge can be addressed with the right set of policies and tools and is currently discussed in the policy-making with frameworks such as the Sustainable Product Initiative. The societal one, however, is so far ignored as a policy conversation despite the fact that it will be fundamental for the success of the Green Deal which is supposed to keep us below the 1,5 degrees warming limit. The internal market, which is after all a consumption-based mechanism, has been the driving force of European integration over the last decades. On the other hand, we as Europeans are going to experience important changes in the way we consume;

with dwindling purchasing power caused by raising prices, buying a car, investing in quality clothing, lasting electric appliances or seasonal local food is becoming a luxury. In this scenario there are two possible ways for the European consumers; either a race to the bottom led by price which will impoverish us all, generating more dependency and waste whilst increasing emissions or a race to the top, keeping resources in the economy, creating local jobs whilst decreasing waste and emissions. The former is cheaper in the short term, but expensive in the long term, the latter is the opposite.

The latter scenario is obviously more desirable, but due to the fact that decisions on consumption are short-terminist, it will not happen unless it is given the right political priority and equipped with the adequate policy instruments.

The economy of prevention and reuse have always been neglected by EU policies, generally more inclined to optimise a bad system than to create a better one. Shared mobility, resilient food systems with reusable packaging, or sustainable textile business models are better for the planet and the people, yet they all imply a system change which will not happen as a natural evolution of the current linear system.

New infrastructure and economic incentives need to be designed and implemented urgently if we are to change the inertia that leads us to collapse. A more resilient, sufficient Europe that focus on the wellbeing of people is possible, but it will require keeping resources in the economy for much longer by placing reuse at the core of our priorities.



MIKE TURNER

Chair, Fibre Packaging Europe

Basing the **European Green Deal's** aspirations for packaging and circularity on evidence and facts

The fibre-based packaging industry is a key contributor to the European Green Deal's aspiration to build a strong, circular and resource-efficient European economy. At Fibre Packaging Europe, we collectively represent a sector that is both highly sustainable and economically important: we employ more than 365k people in Europe and generate around €120bn in annual turnover.

As winter approaches and the war in Ukraine continues, high energy prices are putting pressure on Europe's businesses and households. We need to keep the European Green Deal on track to maintain Europe's resilience during challenging times like these.

Looking at global news, product circularity and sustainably managing our natural resources remain high on the agenda, as world leaders meet at the COP27 climate summit this month. The hosts aim to base discussions on "the most reliable, credible science available" and move forward with concrete actions.

At Fibre Packaging Europe, we believe the same applies to EU policies. To be effective, they must be based on reliable, credible science. This rings particularly true for the packaging sector, as we look forward to the upcoming revision of the Packaging and Packaging Waste Directive (PPWD). We now understand that, as part of this review, the European Commission will propose the legislation as an EU Regulation (PPWR). As such it will immediately, equally apply in all EU Member States after finalisation of the legislative procedure.

The existing Directive is already central to promoting cost-effective circular economy principles across our industry. The upcoming PPWR is a fantastic opportunity to enhance these aims, further driving the circular economy and contributing yet more towards the European Green Deal's objectives. To do so, the review must take the available scientific evidence into account. Any requirement

adopted without robust evidence could trigger adverse effects that harm the environment, the health and safety of consumers and our economy.

The Packaging and Packaging Waste Regulation: getting the revision right

So how to get the revision right? We believe this must start with a recognition of the important role fibre-based packaging plays, its high recyclability and its unique position as a packaging form that is almost wholly derived from renewable sources.

Fibre Packaging Europe represents associations whose members' products are sourced, manufactured, used and recycled in Europe using European technology. These products are highly recyclable and come from sustainably managed forests, replacing products based on finite fossil feedstock. Europe's forest sector has a positive climate effect, mitigating 20% of the EU's annual carbon emissions.

On recyclability, we lead the way. fibres from packaging were used 6.3 times on average in 2018. Several scientific studies show that paper fibres used in carton and cardboard packaging can be recycled 25 times or more while still retaining their quality.

Avoid the environmental, health and economic risks

As a sector, we also lead the way on recycling rates, with 82% of fibre packaging being recycled. In volume terms, this is more than all other packaging types combined, from glass jars to plastic bottles.

To understand our position, one must also take account of the primary function of the packaging: it protects goods throughout the logistics chain and on the shelf. Packaging preserves the product content, maintains a high standard of food hygiene and minimises food waste. Also, it can easily provide

essential product information, from allergens to use-by dates.

In order to serve its purpose, our packaging may sometimes need to be coated, laminated or treated to meet these functional requirements. But this does not mean that fibre-based packaging is not recyclable. Innovation and developments continue to ensure that essential barrier layers have no effect on the recyclability of the packaging. The industry has developed guidelines¹ to facilitate the circularity of fibre-based packaging, focusing on characteristics to be considered from the design phase.

As design for recycling guidelines guarantee that fibre-based packaging is recyclable by design, **we warn against possible 'negative lists' for paper and board packaging, without solid science to back up items on that list.** Restrictions or bans on certain packaging types would fail to take into account the recyclability of the product, and could result in cases where sustainable fibre-based packaging is unnecessarily replaced by fossil-based sources like plastic or glass. This would trigger an increase in the carbon footprint and lead to lower recycling rates.

Such differential treatment also contradicts the principles of equality and non-discrimination found under the EU treaties and would be disproportionate in light of the European Green Deals' objectives.

To maximise sustainability while remaining proportionate, the PPWR must ensure a robust, evidence-based definition of recyclability that is applicable to all packaging. This can first be achieved if it follows **a material specific approach:** taking account of the function of each type of packaging, for the reasons outlined above.

¹ Circularity by Design Guideline for Fibre-Based Packaging ([4evergreen.eu](https://www.4evergreen.eu), 2022)

Second, **the approach must be 'technology-neutral'**: we are an innovative sector that is focused on enabling a transition from fossil alternatives to sustainable fibre packaging. We work together across the sector on innovative packaging, recycling technologies and infrastructure. Policy should reflect and support these activities, not dictate the technology to be used or constrain new ideas.

Follow the facts

When it comes to scaling up product reuse models, our sector has major concerns over the prevailing view that reuse would always be better for the environment.

To be effective, **the PPWR must follow the evidence**: setting up mandatory targets for reuse could hinder fibre-based innovation, decrease the potential for substitution, cause major structural changes in the supply chain and pose an existential threat to parts of the fibre packaging industry.

It could also pose a risk to consumer health: reuse targets could increase the risks of cross-contamination due to multi-location cleaning, sanitation, storage and transport. Fibre-based single-use packaging can, on the contrary, ensure safety and that food stays fresh longer than when it is stored in reusable plastic crates, in turn reducing food waste.

Evidence supports the view that **reuse is not necessarily the most beneficial environmental option for packaging**. According to the results of an in-depth and certified Life Cycle Assessment (LCA) study conducted by Ramboll², the reusable system in quick service restaurants generates 2.8 times more CO₂-equivalent emissions, leads to 3.4 times more fossil resource depletion, consumes 3.4 times more freshwater and generates 2.2 times more fine particles compared to the fibre-based single-use system.

The extra logistics involved can also result in additional costs for food service systems. In contrast, **fibre-based, recyclable single-use packaging sourced from renewable materials adds value for forest owners and the paper industry**, providing additional incentives to plant new trees and supporting sustainable forest management.

An additional LCA study³ found that corrugated fibre-based boxes outperform reusable plastic crates for transporting food in 10 out of 15 impact categories, from climate change to resource and water use.

In other words, in both cases, reuse is bad for the environment and does nothing to mitigate climate change.

2 Ramboll life cycle analysis highlights the environmental benefits of single-use paper-based packaging (EPPA, 2022)

3 Recycling vs Reuse for Packaging: Bringing the science to the packaging debate (FEFCO, 2022)

Solid, evidence-based approaches: a must

Life Cycle Assessment (LCA) studies are helpful because they ensure a level playing field for the packaging sector. They follow a material-based, technology-neutral, and non-discriminatory approach. **By taking account of the full life cycle of a product, LCAs can more accurately measure their environmental performance up to the end of the product's life.**

When it comes to ensuring that all packaging is reusable and/or recyclable by 2030, we support 'Design for Recycling' (DfR) guidelines, which also follow a strong evidence-based approach in defining the recyclability of packaging material. DfR guidelines consider the packaging composition, functionality and suitability for recycling in existing streams and with existing technologies.

Recent examples include the Paper-Based Packaging Recyclability Guidelines⁴ developed by the paper and board recycling, manufacturing and converting industry, and the 4evergreen alliance's Design Guideline for Fibre-Based Packaging. The guidelines include assessments of the recyclability of used paper-based packaging in the collection, sorting and recycling processes. The industry is currently working on more specific guidelines for other fibre-based packaging products.

4 Paper-based packaging recyclability guidelines (CEPI, 2022)



Great recycling starts with great collection of packaging. A core focus for us is the divergence of collection systems to ensure paper and board is always collected separately from other packaging types. It is essential that EU Member States adopt clear collection targets so that our industry can meet its recyclability goals.

Finally, the PPWR should consider more ambitious collection targets: a higher target of 90% for fibre-based packaging could lead to more predictable, reliable collection volumes and flows, in turn leading to an increase in recycling investments.

As with all our recommendations, we see more and more that actions are most effective when they follow the evidence. We look forward to discussing these policies as they progress in the weeks and months ahead.

About Fibre Packaging Europe

Fibre Packaging Europe is an informal coalition of seven trade associations representing industries involved in forestry, pulp, paper, board and carton production and recycling from across Europe. Our joint mission is to provide renewable, circular and sustainable fibre-based packaging solutions to European citizens to achieve the European Green Deal objectives.

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PÄR STENMARK

Chief Sustainability Officer, Inter IKEA Group

Re-designing the future for sustainable business development

Achieving sustainable business development for companies with a global footprint is challenging but also full of opportunities. IKEA, a home furnishing retailer operating a full value chain in over 60 markets has approached this challenge by working toward becoming circular and climate-positive by 2030. Circularity is one of the best opportunities for economies and businesses to address growing climate concerns while generating growth. At its core, it offers the possibility to eliminate waste, creates new ways to engage with consumers, and bases product and service development on the use of renewable or recycled materials. But it requires a complex systemic shift, where all parts of the value chain have to adapt to harness its full potential.

In recent years IKEA has been exploring and developing circular capabilities and has identified several elements as truly key. While the entire transformation is underpinned by the need to respect the complexity of the change required and the patience to continue taking incremental steps toward a long-term goal, several elements must be put in place to succeed in enabling this transformation. IKEA has summarized these into four strategic goals: enabling customers to acquire, care for and pass on products in circular ways, using only renewable or recycled materials, designing all products with circular capabilities, and advocating and joining forces with others toward the circular transformation.

Finding the common language in what circularity means is essential to creating an alignment between the actors within the value chain. Creating a common understanding opens up the doors to a more fruitful discussion. This starts with a common set of definitions, defining terms that are often misunderstood and making easier for businesses, policymakers, and cities to align on what the

circular economy is and how they can adopt truly circular models. Such work has already been started and is still underway, including with the regulatory movements in the EU and the discussion in International Standardization Committees. In support of these efforts, in 2020, IKEA and Ellen MacArthur Foundation joined efforts and developed a set of common definitions for the circular economy, aimed at guiding and clarifying the key terms used in the discussion and development of circular business models.

Yet, simply identifying the language is not enough to stimulate the systemic adoption of circular business models. Circular flows are based on the possibility for products and materials to be reused, refurbished, remanufactured, and recycled in the end. The life of products and materials is no longer confined to a linear model, which starts with the sourcing of raw materials and ends with, hopefully, recycling. In a circular economy, the goal is

to keep products and materials in circulation for as long as possible. One starting point is designing products to enable reuse, maintenance, and repair, and ensuring they can be used at the end of their life as a resource for future products. This development approach requires looking holistically at a foundational design approach starting with the understanding of user behavior, expected lifespan, and emotional connections to the product. IKEA has tested this approach over time and developed a set of circular product design recipes to guide the development of all home furnishing products. These circular product design principles are securing the possibility for products to enable reuse, repair and adaptation, refurbishment, and recycling, and build in the long-term capability for remanufacturing as the processes and global capabilities make this increasingly possible. We are now hoping to see at least some of these principles translated into industry standards, where both standardization committees and legislators,



particularly at EU level, are creating a common industry baseline. We are excited to be a part of this development.

Even if the circular economy is much more than recycling, we should not underestimate the importance of continuing development in this area. At IKEA, we are aware that the largest part of our climate footprint derives from material use.

The transition to the use of recycled and renewable materials needs to accelerate to tackle this challenge. But it is not something a single company or producer can do alone. Infrastructure and common processes are needed to clear the way and enable large-scale sourcing and utilization of secondary raw materials, overcoming the obstacles to setting up the circular supply chain systems needed for the future. To exemplify: we need easily accessible collection sites and recycling centers, a modern definition of "waste" and clearer, harmonized rules to move products and materials between markets. We all have a role to play in a circular system, making the change for the better with new ways of working, reshaping the traditional responsibilities we have had for so long in the linear supply chain. This change may seem daunting, but also offers exciting possibilities.

In this context, we applaud the European Union for having embarked on a journey that places the circular economy at the core of the European Green Deal. The development of the EU Circular Economy Action Plan is paving the way to create firstly an increasing awareness about circularity within the industry and in some cases more broadly within the public. It has offered a good platform to discuss and discover the current readiness for this development. It has also given a push for companies such as IKEA to explore future business models even more boldly. This, however, must remain rooted in a fact-based understanding of how companies work, and more importantly how to meet the demand from the public. For example: establishing useful and accessible sources of knowledge about what it takes to adopt circular behaviors will not be accomplished through simple labeling of products. It will require long-term investment and incentives into making them more attractive to consumers. At the same time, longer product life will not be achieved by simply offering access to a very large number of spare parts. With our experience, we can predict what parts may need replacement and should be prioritized, in order to avoid counter-productive overproduction. Creating accessible and affordable service offers is a key element of engaging customers within IKEA. Convenience and value for money and effort are

central to shifting mindsets toward a more sustainable consumption for the many people.

The good news is we are not starting from scratch. Within IKEA we have understood that many capabilities are already naturally built into our business model. Turning waste into resources has been an integral part of building IKEA. We created our BILLY bookcase from industry waste at a time when scraps and dust from sawmills were seen as waste. Today, the same material is a valuable resource in many different types of board materials, and the BILLY bookcase has remained with IKEA for more than 40 years, still in many, many people's homes. Our suppliers who produce our products have been essential partners in understanding what it takes to for example refurbish a product in an efficient and cost-effective way. Our relentless pursuit to standardize parts has been a strong starting point for developing possibilities to replace broken

parts rather than full products. The development of a wedge dowel replacing screws has enabled disassembly and reassembly so products can be moved, repaired, updated, and passed on. These experiences and knowledge are not always unique to IKEA. It is therefore immensely useful for regulators to continue engaging with businesses and the industry to build on existing best practices.

It is clear that circularity is a crucial piece of the puzzle needed to achieve meaningful change for our planet. The opportunities for innovation are boundless. But they can only be realized through careful balancing of long-term goals with what is possible today, incentivizing efforts while learning along the way. As we say at IKEA, "Most things remain to be done", but we have a bright future to look to. It is about designing this future for long-term sustainable business development.

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New EU corporate reporting standards could help companies become more circular - if done right

The promise and pitfalls of sustainability reporting: an overview

Sustainability reporting is a tool for companies to communicate their progress and plans for creating social and environmental value. It also creates accountability vis-a-vis stakeholders such as employees, investors, civil society, regulators, customers, etc.

Over the past decades, sustainability reporting has developed quickly as corporations increasingly accept that sustainability-related strategies are necessary to be competitive – from gaining business to attracting capital and employees.

Sustainability reporting is expected to create positive effects. First, it can enable better knowledge and management of the environmental impacts of companies. Second, it will be an incentive to improve companies' sustainability performance as it will allow scrutiny by investors, policy-makers, consumers, and civil society.

However, sustainability reporting has not brought about the positive change it could. This is because **the way companies measure and report their sustainability performance is nonstandard, incomplete, imprecise, and**

often misleading. As a result, information about sustainability performance is not useful to investors, governments, NGOs, or even to the companies themselves. **A key solution to this problem is to standardise sustainability reporting to ensure the quality, comparability, and verification of sustainability disclosures.**

The good news is that the EU has decided to go down this path. Brussels is in the process of standardising sustainability reporting. Under the revised Corporate Sustainability Reporting Directive (CSRD), the European Commission mandated the European Financial Reporting Expert Group to develop European Sustainability Reporting Standards (ESRS). The Commission is expected to adopt the first set of standards in the autumn of 2022. Eligible companies will have to track their 2023 activities according to the ESRS and will be expected to report them in 2024.

The rise of corporate circular economy reporting: the time is ripe

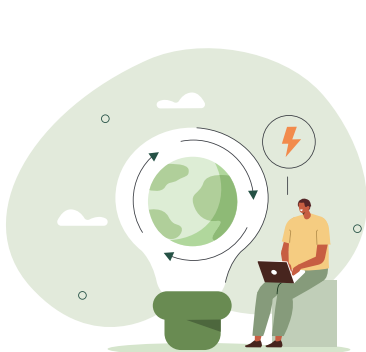
As an emerging sustainability topic, the European Commission has made the transition to a circular economy one of the key

environmental objectives for sustainable finance, appearing in both the European Taxonomy Regulation and the CSRD. Its inclusion signals companies and investors that the circular economy agenda is here to stay and that investors are being encouraged to support companies in their transition.

However, since circular economy is the new kid in the bloc, there are no comprehensive and authoritative disclosure standards. As a result, circular economy content within sustainability reports is largely inconsistent and superficial.¹

ESRS requirements specific on circular economy can address this problem by creating a harmonised reporting system that produces quality, comparable, and useful circularity performance data. In turn, such requirements will encourage the

1 Opferkuch, K., Caeiro, S., Salomone, R., & Ramos, T. B. (2022). Circular economy disclosure in corporate sustainability reports: The case of European companies in sustainability rankings. *Sustainable Production and Consumption*, 32, 436–456. <https://doi.org/10.1016/j.spc.2022.05.003>



development and management of corporate circular economy objectives and strategies.

The road ahead: getting it right

If done right, circular economy reporting standards present a unique opportunity for the EU to make a meaningful contribution to the transition to a circular economy. But what does it mean to get it right? At a minimum, we need three elements.

First, **material inflows and outflows**. Material inflows and outflows in circular economy reporting should be like scope 1 emissions (direct GHG emissions) in climate change reporting – a given. When it comes to resource use, the goal of the circular economy is twofold: reduce resource extraction and improve the efficiency and effectiveness of used resources. For companies to understand if they are reducing or improving their use of resources, they must keep track of both.

Inflows must capture the amount of material that enters a company, and whether materials are virgin, non-virgin, renewable, or non-renewable. Why? To decouple economic activity from natural resource extraction, in a circular economy, non-virgin resources are always prioritised over virgin resources, virgin non-renewable resources are avoided, and virgin renewable resources are always regeneratively grown.

Outflows must address two elements: design, and actual circulation or recovery. Design refers to a company's capacity to devise products following circular economy principles. Circulation or recovery should show the undertaking's ability to keep materials in the system.

Second, **prioritisation of upstream circular strategies**. A circular economy must prioritise strategies based on their ability to keep products at their highest utility level for the longest time. This means that upstream interventions (circular design, repair, etc.) should always be prioritised over downstream strategies (recycling, etc.). If companies fail



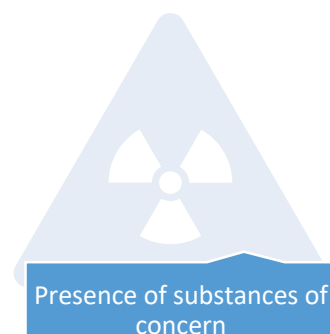
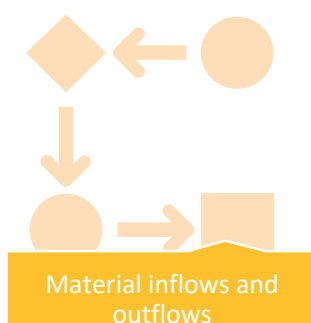
to disclose how their outputs are circulated, we risk having organisations that rely only on recycling, calling themselves as circular as those that repair or refurbish.

Third, the **presence of substances of concern**. A toxic-free environment is a key principle of the circular economy, and one acknowledged widely for a simple reason: non-contaminated materials are easier to reuse and remanufacture. Thus, non-toxic products can have longer lifetimes. Moreover, non-contaminated renewable materials can be safely returned to the biosphere, whereas contaminated materials cannot. Therefore, it is crucial that organisations disclose the use of substances of concern and aim to produce toxic-free goods.

The circular economy is central to achieving the goals of the EU Green Deal. The new EU circular economy reporting standards will determine what type of information

companies disclose, shaping circular economy reporting for years to come. If done right, circular economy information can improve company performance and be useful to EU institutions, investors, companies, and NGOs. If done wrong, corporate reporting will continue to be a box-ticking exercise - consuming the resources needed to drive real change in the mindsets of the corporate world. The choice to get it right rests in the hands of the European Commission.

At a minimum, there are three requirements that EU circular economy reporting standards must require corporations to disclose.





DAN-STEFAN MOTREANU

*MEP (EPP Group - Romania),
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Laying down measures, the key to **food waste** prevention in **Europe**

If food loss and waste were a country, it would be the third largest greenhouse gas (GHG) emitter in the world as per the UN, who also quantified the carbon footprint of the resources needed to produce the wasted food to a staggering 3.3 billion tons of CO₂. The European Green Deal seeks to achieve net-zero carbon emissions by 2050, becoming the first neutral resource-efficient economy. Drastically reducing wasted and lost food would help lower GHG emissions, which is key to delivering the Green Deal and ensuring long-term sustainability. Therefore, the EU is also committed to achieving the Sustainable Development Goals (SDGs), including SDG 12.3 that aims to reduce global food waste at retail and consumer levels by 50% until 2030.

The abundance-scarcity paradox shows that although we generate million of tonnes of food waste yearly in the EU, around 112 million EU citizens are at risk of poverty or social exclusion and every second day, around 40 million people cannot afford a nutritious quality meal. Worldwide, the situation is much worse, FAO data disclosing that in 2020, over 3 billion people could not afford a healthy diet.

The latest available EU data shows that in our Union about 88 million tonnes of food are wasted annually. This value corresponds to an economic loss of associated market value estimated at 143 billion euros. Despite the fact that we are throwing away so much food, food security is a recurring hot topic at the European Parliament, mirroring and voicing the distress of EU producers and consumers alike.

The war raging in Ukraine gave rise to a steep spike in energy prices, an increase in fertilizer availability and associated production costs, and inflation, challenging farmers and fueling concerns over global food security. The 2022 high temperatures and severe droughts all over Europe, deemed

by the JRC (Joint Research Center) as one of the worst over the past 5 centuries, led to dry river beds, wildfires, historic lows for lakes, (re)discovery of archeological sites and resurfacing of hunger stones. The depletion of water availability in soils caused significant declines in crops, with estimates by the JRC for maize, soybean, and sunflowers in the EU showing a decrease of -16%, -15%, -12% with respect to the last 5 years average. Livestock productivity was also challenged, hot and dry conditions directly affecting animals and fodder availability.

The time to increase our efforts to tackle food loss and waste is now. Policy making can help reduce food waste all cross the EU. For example, I believe that transforming organic waste into renewable fertilisers may help farmers and ensure crop productivity. We know that 55% of food waste is generated in households while the remaining 45 % occurs upwards in the food supply chain. I strongly encourage Member States to develop and implement long-term national food waste prevention strategies, with clear

actions, instruments and objectives, focusing on empowering consumers to make more informed decisions. Raising consumer awareness, altering policies to revolutionize our food system and changing habits to promote a healthier life style, all in line with the Farm to Fork Strategy, can prevent food waste, resulting in lower GHG emissions, less money spent on groceries, more equity through surplus redistribution and a circular, sustainable use of our resources.

What has the EU done so far? What is expected?

On 16 May 2017, we adopted a resolution at European Parliament on reducing food waste and improving food safety, stressing the urgent need for action. We called on the Commission to provide a EU definition of food waste, to develop a common methodology to measure wasted food, to facilitate and enable tax exemptions on food donations, and to analyse the possibility of establishing legally binding reduction targets by 2020. We also requested a revision of labelling in order to prevent food waste. On 15 January 2020, we



adopted a new resolution on the European Green Deal, calling for a food waste reduction target of 50% in the EU by 2030 as per our commitment to the SDGs.

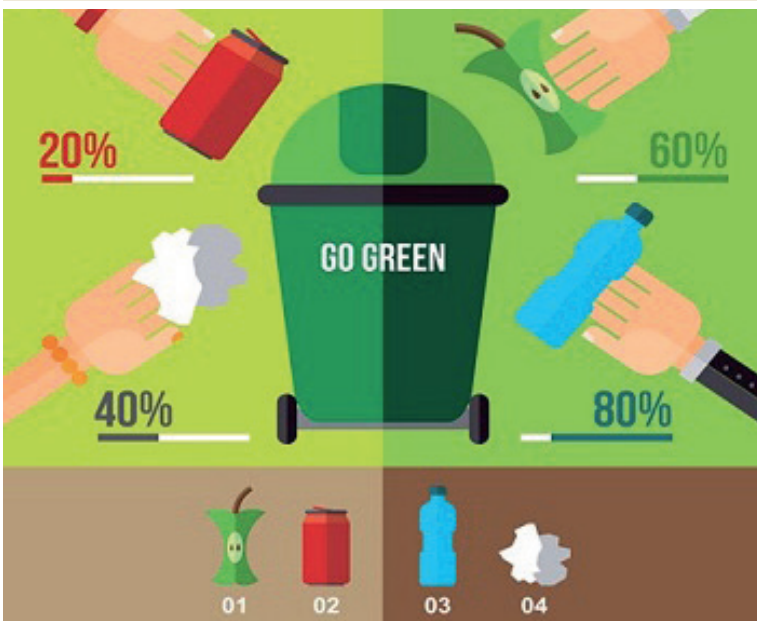
As a result, the EU food donation guidelines were adopted in 2017 to facilitate compliance of providers and recipients of surplus food with relevant regulatory EU requirements (e.g. food safety, food hygiene, traceability, liability, VAT, etc.). Subsequently, in 2019, the Commission adopted the Delegated Decision (EU) 2019/1597 regarding a common EU methodology and minimum quality requirements for the uniform measurement of levels of food waste. Member States have started collecting food waste data since 2020 and have to report it in 2022. All the information will be transparently disclosed on the EU Platform on food losses and food waste. Moreover, in 2020, the Farm to Fork Strategy was published, announcing the plan for the requested actions on reducing food waste. As per the Farm to Fork information campaign, nearly half of all consumers don't clearly understand expiry dates on food labels and estimates show a 10% reduction of Europe's food waste could be avoided with better labelling. The proposal for revising the EU rules on date marking ('use by' and 'best before' dates) will be finalised end 2022 or early 2023 at the latest. Another proposal is expected in 2023 for legally binding targets on food waste reduction.

The revised Waste Framework Directive, adopted in 2018, sets an EU-wide definition of food waste, requires Member States to reduce wasted food at each stage of the supply chain, prepare food waste prevention programmes, encourage food donation or other types of redistribution, and respect the waste hierarchy for food. The corresponding priority order for food waste prevention and management at EU level is the following: prevention - reuse for human consumption (including redistribution) - reuse for animal feed - revalorisation of by-products - recycling for nutrient recovery (composting, biofuel, etc.), - energy recovery - disposal. A new revision for the Waste Framework Directive is scheduled for 2023.

What can you do about it?

Since more than half of the food wasted originates in households, each and every one of us has an essential role to play. It is important to recall that we should never buy food when hungry. Drafting a grocery list to cover provisions for several days, and sticking to it is also recommended. Make use of your leftovers, rotate food (first in - first out) and ensure proper food portioning, opting for refilling in smaller portions as needed. Inform yourself about optimal freezing or storing conditions depending on product type and share tips and good practices for preventing food waste with others. Apply the waste hierarchy and take away the food you are unable to finish when eating out. Whenever possible, buy locally and seasonally, and be aware at all times regarding the unconsumed food products you have at home. Understand the labelling on the products before you buy them. Last but not least, donate the food you are unable to consume before it expires.

We should all remember that by reducing our discarded food we contribute to biodiversity preservation and climate change mitigation. More effort is needed on EU, national, regional, local and individual levels to create a collective conscience set on reducing food waste, that can deploy a circular and sustainable EU bioeconomy, providing new business opportunities while enabling a more equitable society where no one is left behind.





NICHOLAS HODAC

*Director General of UNESDA
Soft Drinks Europe*

Target packaging waste, not packaging circularity

We are just a couple of weeks away from the publication by the European Commission of one of the most important pieces of EU legislation for all sectors that use packaging: the revision of the EU Packaging and Packaging Waste Directive (PPWD). This review aims at ensuring that "all packaging on the EU market is reusable or recyclable in an economically viable way by 2030".

The European soft drinks industry, for which packaging circularity is a priority, has high expectations for the new PPWD. We have indeed always seen it as an opportunity to create the supportive policy enablers that will help us accelerate the transition to fully circular beverage packaging.

However, the truth is that many in the packaging value chain [have deep concerns](#) about several aspects that the European Commission is currently considering. In particular, we are worried about ideas that would force the beverage sector to shift almost entirely towards reusable beverage packaging. Such a disproportionate approach will have huge consequences and doubtful environmental benefits.

What do we need to make our packaging fully circular? Policy coherence and supportive measures

The EU has ambitious goals to prevent packaging waste and our sector is fully supportive of those ambitions. We are committed to improving the sustainability of our beverage packaging and we have made [far-reaching commitments](#) to make our packaging fully circular by 2030. Nevertheless, those commitments are only attainable with the [right policy enablers](#) and the revision of the EU PPWD is the perfect opportunity to create a supportive legislative framework.

Let's talk about **reuse**, a major point of concern for us in the proposal for a revised EU PPWD.

We aim to achieve fully recyclable beverage packaging by 2025, to reach at least 90% collection of all our beverage packaging and to use PET bottles made of 100% recycled and/or renewable material by 2030. We have already made huge investments in recyclability, recycling and the incorporation of recycled content in our packaging: we have established Deposit Refund Systems (DRSs) in several EU countries to get our bottles back and promote closed-loop recycling, and many UNESDA members are already using 100% recycled PET (rPET).

These ongoing actions and investments will ensure that by 2030 our beverage packaging will no longer be waste but a resource: it will be fully recyclable, highly collected and will use high levels of recycled content. With these efforts, we are responding to the direction of travel that the European Commission has set in the Single Use Plastics Directive (SUPD) and the revision of the EU PPWD, with the introduction of mandatory collection and recycled content targets for beverage packaging.

But we will not stop there and we also aim at increasing our offer of reusable beverage systems because we believe that reducing, recycling and reusing go hand-in-hand when you want to reach full packaging circularity.

This is why setting disproportionately high reuse targets on our sector lacks policy coherence. It would force us to give up fully circular packaging to shift almost all investments to a completely different model.

It is also incomprehensible that indications from the proposals from the European Commission may only focus on setting reuse targets for some segments of the beverage industry, including the soft drinks sector, and not for a wider group of sectors. This is discriminatory and disregards all circularity efforts already made in beverage packaging. To ensure a level playing field and truly maximise the potential of reuse, targets should apply to all packaging that is not fully

recyclable, not properly collected and does not use recycled content.

What's wrong with over-ambitious reuse targets for beverage packaging

Disproportionately high reuse targets [are unnecessary to achieve our goal of reducing waste](#). They will **freeze investments in recycling and dismantle a number of highly effective, existing recycling systems at a time when our highly circular packaging is already playing a critical role towards improving resource efficiency and accelerating the transition to a circular economy in Europe**. Why should we disregard this successful circularity path and move towards a completely new business model (reuse) that will have huge economic impact and doubtful environmental outcomes?

Definitely, reuse should be part of the solution to reduce packaging waste but we question the proposals to make reuse the only solution. We should look at reducing, recycling and reusing packaging as the three complementary pillars of circularity for beverage packaging because they are not mutually exclusive.

Furthermore, **over-ambitious reuse targets may also result in a negative environmental impact** if not introduced under the right conditions. According to a [PwC report](#) commissioned by our sector, focusing on a market share of 20% reusable PET bottles by 2030 at EU level, reusable beverage packaging has additional environmental costs compared to single-use recyclable packaging. This is due to increased utility consumption from operating additional machinery and washing bottles, and higher fuel consumption from increased logistical complexity; a complete new set-up is required for returning empty bottles and crates from the retailer back to the original bottler, rather than collecting shredded plastic for recycling. Reasonable and flexible targets are needed to ensure reusable systems are

only set up when and where it makes more sense for our environment than their recyclable counterpart.

Last but not least, **switching to reusable beverage systems will result in huge costs for the beverage industry and its packaging value chain. It indeed requires significant investments** in new bottling lines, new machinery, new crates, more storage space, return logistics, etc. The same PwC report demonstrates that moving towards a market share of 20% reusable PET bottles by 2030 at EU level would equal a cost of almost €19bn – and this only concerns the soft drinks sector.

Don't compromise the future of circular beverage packaging

It is crucial to do the revision of the EU PPWD right. We cannot afford wasting this opportunity to create an enabling legal framework that will accelerate the transition to a circular economy for beverage packaging.

We therefore propose a more realistic and manageable integration of reuse when and where it makes sense:

- **Any reuse target should be based on a thorough environmental and cost impact assessment** to ensure that reusable beverage systems are only put in place where they make the most sense for our environment and are cost-efficient.
- **The reuse measures should be set at the European level and through a sectoral approach** rather than being set on each individual economic operator. Such an approach will allow each sector with the

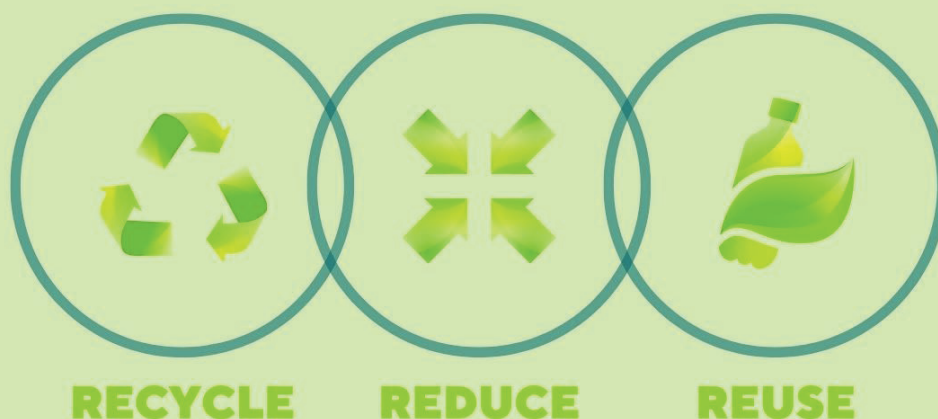
greatest potential for reuse to direct the investments where they make the most sense. It will also avoid a patchwork of national reuse measures, creating a fragmented market.

- **All sectors, and not just the beverage industry, where the increased use of reusable packaging is feasible and would bring net environmental benefits, should be treated equally.** They should be encouraged and incentivized to increase their use of reusable packaging in order to shift consumer collective behaviour and increase the positive effects of the measures taken.
- **The reuse measures should take into account the full scope of reusable beverage solutions,** including refill at home solutions, and promote innovation in the field of waste reduction by adopting a wide definition of reusable beverage systems.

We stand ready to continuing our cooperation with EU regulators to ensure that we build the right future for circular beverage packaging.



Three complementary ways to achieve waste reduction in the soft drinks sector





CLARISSA MORAWSKI

Chief Executive, Reloop Platform

Broad European Coalition support ambitious action on Circular Beverage Packaging

The European Union (EU) leads the world in accelerating the transition to a circular economy—in both policy and practice—through the European Commission’s Circular Economy Action Plan 2.0 and the European Green Deal, which aims to make Europe climate-neutral by 2050. As its legislative landscape continues to evolve, packaging remains a key focus for the EU. In that context, a number of recent and upcoming changes have occurred in several European Directives aimed at eliminating waste and ensuring that resources are recirculated through the economy for as long as possible.

In 2018, the Waste Framework and the Packaging and Packaging Waste Directives were amended to include higher recycling targets, increased producer responsibility, product bans, and more accurate methods for calculating recycling rates. A year later, in 2019, the EU raised the bar even higher with the passing of its Single-Use Plastics Directive (SUPD), which introduced measures to reduce the consumption and use of single-use plastics at EU level; including more product bans, a recycled content target for drinks bottles (25% in PET bottles from 2025, and 30% in all bottles by 2030), and even higher collection for recycling targets for plastic drinks bottles (77% by 2025, increasing to 90% by 2029).

Reloop’s newly released Target 90 report (see [Target90.org](https://www.target90.org)) calls on the Commission to extend rules requiring 90% separate collection of plastic bottles to all other recyclable drinks packaging, mostly glass and metal. In addition, calls for deposits applied to all metal, glass and plastic drinks containers to boost recovery. Without such Deposit Return Schemes (DRS) rooted in EU law, supplies of used PET plastic will not meet demand and, by 2030, the average new bottle

will contain just 15% recycled plastic, half the amount required by EU law. Shortages would also threaten environmental pledges for multiple sectors.

Despite the EU having some of the world’s best waste rules, an estimated third of drinks containers will be lost in 2022, amounting to 830,000 tonnes of plastic, 140,000 tonnes of aluminium and 9 million tonnes of glass, materials worth nearly €900 million.

Hitting the 90% target in all 27 member states will cut consumption of 1.6 million tonnes of virgin PET, almost 400 thousand tonnes of virgin aluminium and 10.5 million tonnes of virgin glass. That would offset 10 million tonnes of CO2 equivalent by 2030. The 2030 offset of 2.7 million CO2e, is equivalent to 1.4% of the EU’s 2030 target, with the savings realised globally. DRS would take time to ramp up, but will avoid an estimated 170 billion wasted drinks containers by 2030, while also cutting vast amounts of litter, boosting closed-loop recycling and greatly

enhancing the quality of recycling streams. Once DRS and closed-loop recycling are the norm, the benefits are significantly higher.

The European Commission has a mandate to make all packaging reusable or recyclable by 2030 and is expected to propose rule changes towards the end of the year. Denmark, Finland, Germany, Norway, and Lithuania already meet Reloop’s 90% target, while 18 EU states, covering 45% of the EU population, will have DRS in place by 2026.

After some industry opposition, large industry players are now openly supporting DRS.

As demand for recycled materials grows, a paradox is created in which there isn’t enough high-quality material being collected and recycled to meet that demand. Deposit return systems offer a solution to this paradox by ensuring a clean stream of materials fit for closed-loop recycling, by collecting and managing materials in a way that minimises contamination and ensures



high-quality outputs. This is why more and more drinks companies (including Coca-Cola, Pepsi, and Nestlé) and industry associations have begun to throw their support behind such schemes.

After years of opposing DRS, the drinks industry has begun to realise that DRS is the only realistic way to increase the recycled content of their bottles and cans to reach a higher material efficiency and meet their corporate sustainability targets. In an open letter to the European Commission in September 2020, the European Federation of Bottled Waters (EFBW)—representing natural mineral and spring waters, and UNESDA—representing soft drinks producers—called for the widespread adoption of DRS in European countries to meet the separate collection and rPET targets set in the EU's SUPD.

In October 2021, Natural Mineral Waters Europe (NMWE) and UNESDA (in association with Zero Waste Europe) urged the EU to acknowledge the role of DRSs in achieving a circular economy for beverage packaging in Europe, and to support the establishment of minimum requirements for new DRSs in the revision of the PPWD. In their joint statement to the European Commission, they stated that: "DRS have not only delivered high collection rates for beverage packaging in countries where they are in place, but they also have the benefit of providing high-quality, food-grade recycled material in a clean stream."

Most recently, on the 24th of October, a broad coalition representing European beverage

producers, material and technology suppliers, recyclers, NGOs and public entities

called for ambitious action to enable full circularity of beverage packaging in the

anticipated draft amendment of the PPWD. The coalition highlighted the importance of setting a 90% separate collection for recycling target by 2029 for beverage packaging; and supports the adoption of well-designed deposit return systems (DRS) in Member States whose collection performance fails to meet interim milestones needed to attain the 90% target. This is a fundamental condition to promote closed-loop recycling and deliver circular beverage packaging.

Mandatory deposit return systems, together with a 90% separate collection for recycling target—what ReLoop calls a "dual-action proposal"—are proven solutions that are good for the climate and enhance Europe's resilience in terms of securing access to resources (i.e. material and energy). This opportunity is most timely given the current

geo-political context in Europe, where security of energy supply and access to resources has become increasingly critical.

When it comes to real action on waste and climate, we do not have the luxury of waiting any longer. We do not have the time to turn down solutions that are proven to work, and that help us meet both our climate mitigation and waste prevention objectives.





ELENI DESPOTOU

FEFCO's Director General

Bringing science to the packaging debate

The EU Green Deal and the Circular Economy have taken a leading role in the European Union's agenda. Given the evident impact of climate change and the ongoing energy crisis, measures related to these initiatives are vital.

When discussing waste generation and management, a strong focus has been placed on the recyclability and reusability of packaging. At European level, the debate on packaging is set to take the centre stage with the Commission's upcoming review of the **Packaging and Packaging Waste Directive**, expected to be published on November 30. The revision provides the EU with an opportunity to support the transition to a circular and climate neutral European economy. This is only feasible if the Commission delivers a sensible, realistic and fact-driven approach.

The European Federation of Corrugated Board Manufacturers (FEFCO) represents the interests of the corrugated cardboard industry, whose products are inherently circular. The industry is committed to supporting Green Deal ambitions. With an average of 88% recycled content for corrugated cardboard and a recycling rate for paper & board of 83% (Eurostat 2018), the industry holds the packaging sector's highest recycling figures. This is thanks to well-functioning and effective recycling system in place and the high demand for recycled paper as a secondary raw material.

In 2022, FEFCO released three studies aiming to better understand the environmental impact of certain packaging solutions and to provide scientific evidence to support the policy discussion. The studies include a peer-reviewed comparative life-cycle assessment (LCA) of reusable and recyclable packaging solutions for the food segment, performed by Ramboll; a hot-spot analysis of the e-commerce logistics chain, performed by Ramboll; and a white paper providing a critical view on packaging recycling and reuse in the

European Circular Economy, performed by VTT Finland.

The peer-reviewed comparative LCA [demonstrated](#) that recyclable corrugated cardboard packaging outperforms reusable plastic crates in **10 out of 15** environmental impact categories, including climate change, resource use (fossils), water use, and many others.

The study also found that **reusable plastic crates should be used at least 63 times** to be more environmentally friendly than corrugated cardboard – which implies continuous use for over 10 years. This number is unrealistically high given that the baseline scenario considered by the LCA, based on the best available scientific data, estimates an average return rate of 24 times for reusable plastic crates. Additionally, since reusable packaging can be subject to breakages and losses, it is questionable whether the required number of rotations to be beneficial for the environment can be achieved.

The second study performed, the hot-spot analysis, confirms the importance of the number of rotation when considering the

impact of reusable packaging. The 'real number of uses' was identified as the number one 'hot-spot'. This life cycle stage accounts for a significant proportion of the environmental impact of the packaging within the supply chain. The 'real number' proves difficult to ascertain since official data is largely unavailable. Essentially, achieving the highest possible number of rotations is the key factor for reusable packaging to reduce its impact on the environment, and the knowledge gained from the LCA confirms that, in the case of reusable plastic crates, the rotations needed are unrealistically high.

A second 'hot-spot' has to do with logistics parameters associated with reuse, such as storage and the transport distance. The complexity of e-commerce supply chains is not yet fully understood, meaning that their potential environmental impact is often higher than anticipated. Evidence from ongoing trials indicates that reusable packaging in e-commerce does not provide the necessary economic or environmental returns to be considered a valuable alternative.



Regarding the actual transition to reuse, the White Paper reaffirms that changes to reuse systems involve substantial economic investments and create new costs related to return logistics, transport, washing, sorting, repair, etc. Although reusable packaging could bring value in certain applications, a **complete shift to reuse could compromise current well-functioning recycling systems**. If policymakers intend on favouring the most sustainable option, **products need to be evaluated across their life cycle on a case-by-case basis**.

Besides the possible worsening of packaging's environmental impact outlined in the FEFCO studies, reuse systems also risk increasing food waste due to contamination in the logistic chain or inadequate cleaning of reusable packaging. Hygiene and safety concerns for consumers and producers must also be considered when reusing packaging in food contact applications. Additionally, high reuse targets could have significant implications for the intercontinental transportation of goods and create unnecessary trade disputes with third countries that cannot

Finally, reuse measures rely heavily on consumers to contribute to the functioning of reuse systems, especially in the case of e-commerce. The Commission should not under-estimate the important role of citizens to return packaging in good condition to the right place for reuse.

FEFCO believes that packaging circularity objectives should be aligned with the Commission's climate neutrality ambitions. Therefore, FEFCO initiated a roadmap establishing the corrugated cardboard industry's strategy and pathway to reaching **climate neutrality by 2050**. This thorough piece of work shows the intention to decarbonise the sector and demonstrates the industry's full alignment with the Green Deal objectives.

Corrugated cardboard packaging is **fit for the future and circular by nature**.

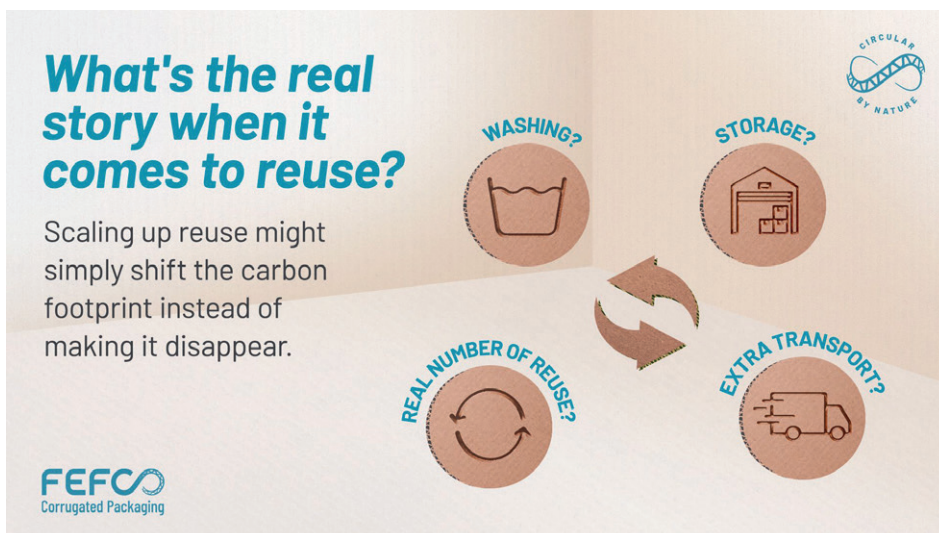


There is a great concern that the upcoming review of the PPWD will include particularly high targets for the reuse of packaging, indiscriminately affecting different packaging materials.

EU legislation should consider recycling and reuse as complementary measures and not prioritise one over the other. An exponential shift to reuse could have unintended consequences that must be accounted for by the legislator before specific targets are set.

guarantee the implementation of reuse systems.

Another possible consequence of reuse for the supply chain is an increase in packaging standardisation, which could prevent innovation, lead to overpackaging and increase the use of filling materials for product protection. Products require a diverse range of packaging in all shapes and sizes that would lead to a huge increase in the amount of packaging placed on the market and packaging waste overall.





MONIQUE GOYENS

Director General of BEUC

Rules for sustainable products are one side of the coin. Enforcing them is the other

It is encouraging for consumers that the EU is working on rules to make products sustainable by design. But if policy-makers are serious about delivering, they should not forget about the “on the ground” aspect, argues BEUC’s Monique Goyens.

This year, the European Commission made great strides to make sustainable products the norm. Such efforts came in the form of an ambitious proposal called Ecodesign for Sustainable Products Regulation (ESPR). It includes measures to improve products’ durability, reparability, resource and energy efficiency, and recyclability potential. A no brainer when lack of longevity is reported as a [major concern for consumers](#).

Ecodesign 2.0

This plan aims to revise the current EU Ecodesign rules thanks to which our washing machines, fridges or TV screens rely on less energy to perform just as well. A [study](#) we published in 2016 estimated that Ecodesign can save EU households over 300 euros every year. Six years on, considering the skyrocketing electricity prices, one can only imagine the even higher savings brought about by such measures.

The ongoing revision aims to take Ecodesign to the next level and make our products last longer than they do now. And it doesn’t stop at the products I mentioned above. The draft law covers almost all consumer products (except food, feed, and medicines). It also addresses a wide range of sustainability aspects, going well beyond energy efficiency. Provided the ambition remains untouched, the ESPR will be a game changer, bringing longer lasting and energy efficient products to consumers.

Looking good on paper... and on the ground?

We all agree on the need for measures to make products more resource efficient,

durable, repairable, and recyclable by design. Alongside, the European Commission must roll out safeguards to make sure rules are respected and enforced by all actors involved and consumers have the necessary protections to enforce their rights in case of non-compliance.

First, **the European Commission and Member States must put in place adequate market surveillance**. This would ensure that Ecodesign rules are respected, and non-compliant products do not find their way into the market to begin with. For imported products, there is an additional need for strong cooperation with customs authorities. That way, wherever the products come from, consumers can trust the environmental claims on products are reliable and that the smartphone they bought will be as easy to get repaired as the label claims.

Weak controls from market surveillance authorities risk lessening the improvements that these new Ecodesign rules are set to bring for consumers and the environment. What’s more, putting more money into market surveillance provides a good return on investment. Such costs will always be significantly lower than the financial benefits resulting from bringing more energy-efficient, durable and repairable products on the market.¹

¹ The EU-funded project EEPLIANT2 (coordinated market surveillance activities) found that the value of the potential energy saved through increasing market surveillance joint actions far outweighs the cost of the market surveillance campaigns, e.g. the domestic refrigeration activity alone would by 2030 result in energy savings of 369 GWh counting to €75.6 million. Whereas the costs of repeating this activity on a bi-annual basis for the next 10 years would not exceed €5 million. https://eepliant.eu/images/EEPLIANT2_-_Laymans_Report_v9-compressed.pdf

Then, online marketplaces should have the same responsibilities as brick-and-mortar shops. Today, unsafe and unsustainable products from third countries are able to enter the EU market incognito via online platforms. A spot check by our member organisations found that two thirds failed to comply with the most basic safety rules. One can only expect that Ecodesign requirements -which are more sophisticated than safety ones to check for compliance – will also be a blind spot. With more and more consumers buying [products online](#), the issue is massive, and requires urgent action.

If, despite those safeguards, products breaching Ecodesign rules still make their way into the market, **consumers must have the necessary protections to enforce their rights**. In other words, consumers who buy products that cannot be easily repaired or fail too early, must be able to get compensation. To make this happen, the EU Commission must better link Ecodesign with the relevant consumer rights instruments.² This would certainly convince companies to take the rules seriously and deter them from placing faulty products on the market.

Be it for products’ sustainability or any other policy areas, getting a law adopted is only the first part of the marathon. The second part is making sure that such laws deliver on the ground. And you know what they say about marathons: the last part is the hardest. So, law makers had better get ready now to get to the finish line, which is to make sure consumers get truly more sustainable products.

² i.e., the Sales of Goods Directive, the Unfair commercial Practices Directive, and the Collective Redress instruments.



MIRIAM THIEMANN

Policy Officer for Sustainable Consumption, European Environmental Bureau



ORLA BUTLER

Policy Officer for Circular Economy, European Environmental Bureau

Empowering consumers for the green transition - combatting greenwashing and obsolescence

More than half of EU consumers have environmental impact in mind when shopping¹. This has led to a proliferation of green marketing, with 75% of products on the market carrying an implicit or explicit environmental claim², resulting in consumers' distrust and confusion. And rightfully so! Recently, a screening of green claims by consumer authorities revealed that 42% of claims were potentially misleading and 59% were without easily accessible evidence³.

Meanwhile, EU citizens want long-lasting, repairable products. Consumers are almost three times more likely to choose products with the highest durability on offer - given that they have reliable information⁴. Despite this, evidence of shortening product life spans is increasing. Data suggests that the average lifetime of small consumer electronics has decreased by up to 20%.⁵ It has somehow become widely accepted that even the most high-tech devices last no more than a few years.

To combat deceptive claims and short-lived products, the EU Commission has recently released its proposal *Empowering consumers for the Green Transition*. The proposal aims to help consumers make more sustainable purchases through better product information, and to protect consumers from greenwashing and early obsolescence. But to what extent

does the proposal really empower people to consume more sustainably and navigate the green transition?

Reliable and truthful green claims and labels

The proposal contains much-needed rules to limit misleading green claims and labels: importantly, it forbids the use of general green claims which are not backed by robust methods proving environmentally excellent performance, such as the EU Ecolabel. It also requires that all sustainability labels rely on minimum credibility and transparency principles, such as independent verification.

But will market surveillance authorities and companies be able to easily identify whether labels comply with strict rules? Instead of relying on lengthy case-by-case assessments, an EU registry where reliable labels are listed and easily identified would support efficient enforcement.

Carbon neutral claims represent one of the most widespread claims on products today, found on anything from food items to cross-continental flights, but they are also one of the most misleading and require urgent attention. Carbon neutral claims in the current proposal would still be allowed if the measurement method is stated. However, to claim carbon neutrality, companies usually rely on offsets, but from a scientific perspective carbon neutrality can only be achieved at a global level⁶. What's more, offsets cannot replace actual emission reductions.⁷ Despite this, marketing is winning the battle as surveys show⁸ that the majority of consumers are misled by

6 ADEME, [Utilisation de l'argument de neutralité carbone dans les communications](#)

7 Client Earth, [Legal risks of carbon offsets](#)

8 Vzbu, [Climate-neutral products: 89 percent for clear rules and a tested seal & ACM. Consumers find claims regarding carbon offsets unclear](#)

1 [EU Consumer Conditions Scoreboard : 2019 edition](#)

2 [Consumer Market Study on environmental claims for non-food products, 2014](#)

3 [Screening of websites for 'greenwashing'. European Commission, 2021](#)

4 [Sustainable consumption | European Commission, 2022](#)

5 [Planned obsolescence: exploring the issue. European Parliament, 2016](#)



the term "carbon neutral" and are induced to believe that a carbon neutral product is environmentally friendly. Already now, many companies are facing court cases⁹ over their misleading climate claims and several have already lost the case. Therefore, the proposal should directly prohibit carbon neutrality claims based on offsets. Companies should instead transparently communicate their actual emission reductions and remaining carbon footprint.

Purchasing products that last

As our dependence on electronics grows, so must our action to counter their environmental consequences. With only 17% of global e-waste actually recycled¹⁰, this proposal is an opportunity to address some of these issues by integrating the right to repair within it.

Using devices for as long as possible can be difficult, as they become obsolete earlier than their expected lifetimes. For example, when manufacturers stop making software updates available for a device, this can render them useless - even if the hardware is still functional. This proposal seeks to tackle these so-called early obsolescence practices through requirements such as to inform if a product contains a feature that will hinder repair. To help consumers avoid such deception, products subject to practices which foreseeably reduce the lifespan of the good should not be marketed.

The introduction of a reparability index would allow shoppers to understand how repair-friendly their products are. For the index to be effective however, price must be included as a scoring criterion, given that consumers are easily dissuaded by the steep cost of repair compared to the price of a new product. Further information on the product's expected lifetime and protection through product guarantees would reinforce this provision. Consumers should be aware of what could happen during their product's lifespan, like whether the seller will refuse to perform a repair on a product that has previously been repaired outside the original manufacturer's network. Placing an obligation on producers to grant access to other information such as the availability of parts and tools, repair manuals, and information on software updates is equally important to give customers the whole picture of what they're buying.

Shifting the burden

⁹ Clean Energy Wire, [Company climate claims in court](#)

¹⁰ [Global E-Waste - Statistics & Facts | Statista, 2022](#)

Tightening up the proposal's loose ends is a step towards a circular economy with consumers at the forefront. Yet changing consumption patterns is the responsibility of all, not just individual consumers. Policymakers have the responsibility to provide the right ecosystem so that consumers can change their consumption patterns and have the right tools at hand. Policy must be coupled with corporate responsibility, as a consumer's freedom of choice is subject to what's on offer. If sustainable choices are not the default, and we are continuously bombarded with false advertising, then consumers are neither free nor empowered.





Circular claim: how to better involve consumers into the loop?

Citeo, the French company in charge of the Extended Producer Responsibility for household packaging and graphic papers, strongly welcomes the European Commission's initiatives foreseen by the Green Deal and the ongoing revisions of the European framework, to further develop a circular economy.

As a matter of fact, the European Union has taken important commitments over the years to empower consumers in the green transition and enable them to be better informed about the environmental sustainability of the packaging and products they buy with the aim to tackle greenwashing practices misleading consumers. Indeed, providing consumers with proven, intelligible, and clear information enable them to make rational choices, adopt more environmentally friendly behaviours and thus develop circular economy at scale.

Clear and harmonised information is essential to include the consumer in the responsible buying action

Improving consumer information ultimately leads to empower consumers to become an active protagonist for switching to a more sustainable consumption. Considering this observation, we are convinced that the European Union should strengthen its legislative framework and should harmonise labels on recycled content, on sorting instructions and on reuse, as part of the proposed revision of the Packaging and Packaging Waste Directive.

Indicating the effective percentages of organic origin and/or recycled content in the packaging will provide consumers with a complete and uniform information on the components of the product. For instance, it would give consumers a better understanding of what bio-based plastics are. The studies conducted by Citeo conclude that French

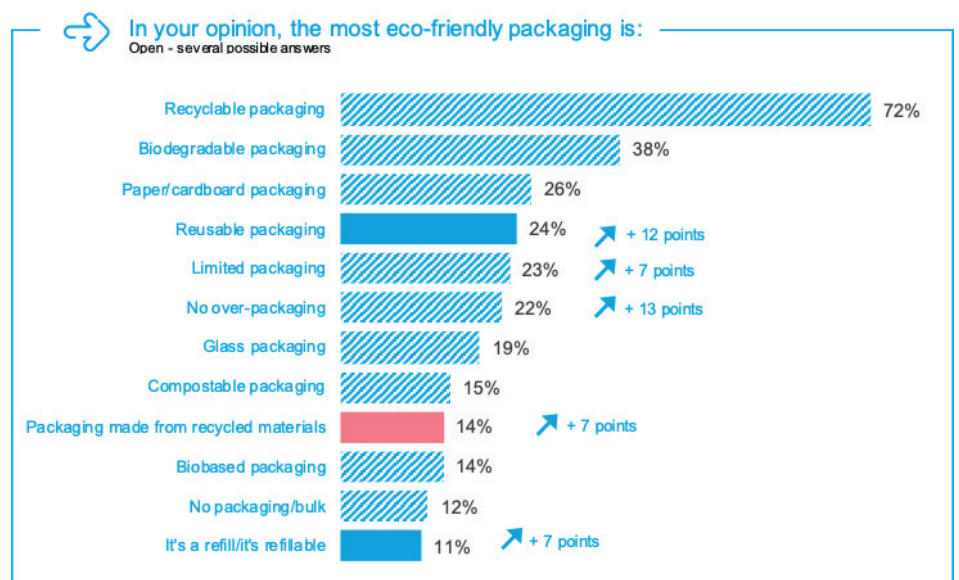
consumers do not fully understand what *bio-based* means. According to Citeo's study on environmental claims conducted in 2019, only 2% of French consumers understand what "bio-based" means. Without the percentage of bio-based material, the term is misleading and can be counter-productive in the fight against plastic pollution. Equally, a harmonisation of labelling on recycled content will also be useful for consumers to understand whether their packaging is made from recycled materials, and at what percentage level.

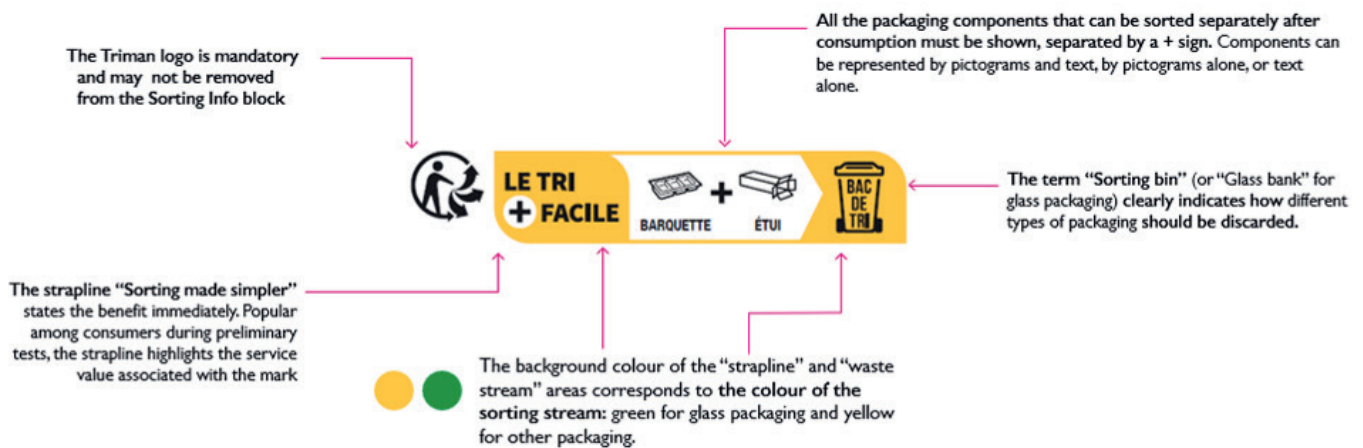
Just as consumers need to be able to assess packaging materials to make sustainable choices, they want to appraise their recyclability or reuse potential. As consumption patterns evolve, consumers develop higher expectations on the packaging characteristics, as shown by the recent [Shopper study](#) conducted by Citeo and Action Plus. Among those, recyclability and reuse have indeed been rising with specific expectations on bulk in DIY stores or in organic shop.

To meet all these needs and because the consumer purchase decision may be limited in time, Citeo developed this labelling built first on a textual basis "reusable packaging" with further online information about collection points.



Furthermore, while comprehensive product information contributes to enabling consumers to change their habits, efficient collection and recovery of waste are crucial conditions for achieving the European circular economy targets. The introduction of an EU harmonised label on sorting instruction should help to improve collection and achieve the European targets. By way of inspiration, the French "Info-tri" (sorting signage),





consumer-tested and built together with producers, provides clear information on the separability of components of the packaging and on sorting points to ensure to facilitate the sorting gesture. In fact, the consumers study shows that 8 consumers out of 10 very well understand this marking.

A transparent communication on products is crucial to support consumers towards new ways of consuming

Packaging is the first touch point consumers have with a product or a brand, but it is often saturated with information which can be confusing and even misleading for them. A recent [study](#) led by the European Commission and national consumer authorities and published in 2021 concluded that 42% of online environmental claims analysed were false, exaggerated or deceptive.

Putting selective product information on pack will allow consumers to better understand claims printed on the packaging and their direct consequences in terms of sorting gesture, collection, recycling, carbon, and biodiversity impact, etc.

In addition, to avoid generic claims and enable consumers to choose products that are genuinely better for the environment than their competitors, Citeo recommends using specific and proportionate claims supported by tangible proofs. The "Product Environmental Footprint" (PEF) developed by the European Commission, within its initiative "Legislative proposal on substantiating green claims" could tackle greenwashing. As it aims to quantify all environmental impacts over the life cycle of a product or service, this initiative would enable companies to support their claims with tangible proofs. It does address indirect environmental impacts of packaging related to the product, such as the potential effects of packaging on food waste. Therefore, the use of this methodology should be complemented with the use of other existing

tools as it is rather a B2B tool for companies to improve their environmental performance than a B2C communication tool.

To empower consumers, the Digital Passport for Products, foreseen by the Eco design for Sustainable Products Regulation (ESPR) is an innovative instrument to make information more transparent. Given that packaging and product are closely linked, information should not be limited to the product itself and should also include sustainable information on the packaging.

Last, and to ensure companies support their claims with tangible proof, the European Commission presented at the end of March 2022 an initiative on empowering the consumer in the green transition, amending Directives 2005/29/EC and 2011/83/EU. Citeo welcomes this initiative which will ensure that companies using generic and non-specific claims, such as "carbon neutral", are considered to have misleading and unfair commercial practices and can be sanctioned for it. It will provide clear views on the definition of environmental claims.

Innovation is an accelerator to deploy impactful consumer practices

"Consumer empowerment is crucial to accelerate the circularity of our economy. Innovation in terms of use or materials is one of the solutions but it needs to be supported at European level." – Jean Hornain

To deploy new consumption model, innovation could also be a driver to accelerate the transition to more sustainable actions. The combination of both reuse innovation and material innovation will contribute to increase resource productivity and decouple economic growth from resource consumption and its effects on the environment.

For that reason, each year, Citeo holds the Circular Challenge, an accelerator of solution

which aims to help start-ups in the field of circular economy to develop their solution at scale, such as the Chilean start-up [Algramo](#) which developed and installed free machines in shops to distribute food and household products in bulk at low prices. Getting consumers to adopt more environmentally responsible behaviour also means giving them the means to act.

Consumers are at the heart of developing new circular models, and an intelligible, clear, and harmonised information at the European Union level will enable them to favour sustainable behaviour in order to further close the loop.



FRANÇOISE BONNET

Secretary General, AISBL ACR+

Putting cities and regions at the heart of the circular economy

The circular economy is the answer to a global issue enabling us to address the current environmental challenges threatening our planet (such as plastic pollution, to name but one). We all know that to be successful, it requires the cooperation of different international actors (governments, producers, consumers, etc.). Nonetheless, one should not forget that the local levels are parts of the equation and the urban dimension is crucial.

For ACR+, it is nothing new and here is why cities and regions should be placed at the heart of the circular economy. For years, the network and its members have been advocating for the transition from a linear economy to a circular economy with a strong focus on the regional and local level. We are working to give reality to a new way of producing and consuming that reduces the amount of raw materials used while sustainably using other resources such as water and energy. This will be reached through the development of eco-design, the strict application of the waste hierarchy but also of the territorial hierarchy. As a reminder, the waste hierarchy is based on the Lansink's Ladder, according to which reuse must be promoted before recycling or energy recovery, and landfill remains the least favourable action. The territorial hierarchy, a concept at the centre of ACR+ vision, can be summarized by the motto "think global, act local". It consists in promoting the local level as much as possible. In this way, the environmental impacts are less important, especially when thinking about environmental impacts of transport, and the local economy is flourishing.

Back to circular economy... The first definitions of this now well-known model of production and consumption referred mainly to sustainable waste management. Under this view, decentralized authorities come into the

picture in a rather straight-forward and simple way, since municipal waste management is usually dealt with at local level. As a matter of fact, most infrastructures are the property of municipalities or inter municipalities. Collection and treatment services are considered as a public service, directly managed by public companies or "delegated" to private ones.

We must go beyond that "mere" waste management competence. Decentralized public authorities are key players in the transition to a circular economy thanks to other competences they have in hand. They deliver concrete actions in sectors like building, food or manufactured products and are the best advocates to convince citizens/consumers and local producers to speed up the adoption of sustainable production and consumption habits. In short, local authorities are those who can deliver concrete solutions and make things happen on the ground for citizens.

When it comes to sustainable consumption, regions and cities have certainly a role to play in raising public awareness and in facilitating access to sustainable goods and services. Many inspiring solutions have already been explored and successfully implemented – yet often still deserving more light – by decentralized authorities across Europe: local take-back obligations, rewarding the use of sustainable products or subsidizing activities like repair or reuse services in order to boost them on the market.

Regarding production, local economic incentives and legal obligations towards producers can help making it sustainable. Cities and regions can support and facilitate the local production of food, push for a circular building sector by encouraging the use of local materials, making mandatory to manage in a sustainable way demolition and construction waste on sites, etc. Without

forgetting the important role Circular Public procurements can play to boost such a true sustainable production.

But here again, it is just the beginning, a small piece of the puzzle. In order to really change the paradigm, the circular economy should be approached under a broader perspective, insisting not only on holistic and systemic approaches but also on a collaborative approach where all stakeholders of a value chain share the same objective and work together in order to achieve it. **A cultural shift is needed since cultural barriers are the biggest ones on our current path to a resilient Europe.** All aspects of sustainability, especially social, cultural and political ones are to be considered in the circular solutions that are developed. Who else but the cities and regions can grasp all these aspects at once?

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