



GrAinS

Greening Agrifood
in Social Economy



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Eco packaging and unpacking

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Abbreviations

CAP	Common Agricultural Policy
EAFRD	European Agricultural Fund for Rural Development
EC	European Commission
ECHA	The European Chemicals Agency
EPR	Extended Producer Responsibility
EPRS	European Parliamentary Research Service
EU	European Union
FAO	Food for Agriculture Organization
OECD	Organization for Economic Co-operation and Development
PPWD	Packaging and Packaging Waste Directive
SE	Social Economy
SEOs	Social Economy Organizations
SME	Small and Medium-size Enterprise
UNIDO	United Nations Industrial Development Organisation
VCM	Controlled Mechanical Ventilation
WFD	Water Framework Directive

1. Green Deal and Circular Economy

1.1 Introduction

The European Green Deal provides the roadmap to achieve an extensive transformation across all aspects of society, facing major environmental, economic, and social challenges.¹ Sustainability plays an increasingly important role, and packaging pressing need to upgrade to meet certain requirements.

Traditional packaging designs were largely developed with a linear economy model in mind, where products are created, used, and then discarded. This model relies on a "take-make-dispose" approach, prioritizing convenience and cost-effectiveness over environmental considerations. Packaging materials, often made from single-use plastics or non-recyclable composites, have been designed for durability and protection during transport, with little thought given to what happens to the materials after use.

In this framework, waste generation was simply a by-product of the process, with limited focus on reusing, recycling or biodegrading. The linear economy thrives on constant resource extraction and waste accumulation, leading to issues such as landfill overflow, environmental pollution, and resource depletion.

In recent years, however, there's been a shift towards a circular economy. This model promotes sustainable packaging by considering the entire life cycle of a product, focusing on designing for reuse, recycling, and resource efficiency. New packaging designs aim to minimize waste, use renewable or recycled materials, and facilitate easy recycling, all of which help close the loop and reduce the impact on the environment.

Nowadays, instead, packaging should be sustainable, therefore realised in a circular economy perspective in which waste production is limited as much as possible. The circular economy is a production and consumption model that involves sharing, lending, reusing, repairing, reconditioning and recycling existing materials and products for as long as possible.²

In November 2022³ the European Commission (EC) proposed new EU-wide rules on packaging. These include a proposal to improve the design of packaging, provide it with clear labelling and encourage reuse and recycling. The proposal also includes a transition to bio-based, biodegradable

¹ European Commission (n. d.) Research and innovation for the European Green Deal. Available at https://research-and-innovation.ec.europa.eu/strategy/strategy-2020-2024/environment-and-climate/european-green-deal_en. Accessed 13 October 2024

² European Commission, Circular economy: definition, importance and benefits <https://www.europarl.europa.eu/topics/en/article/20151201STO05603/circular-economy-definition-importance-and-benefits#:~:text=The%20circular%20economy%20is%20a, reducing%20waste%20to%20a%20minimum.>

³ European Commission. (2022). European Green Deal: Putting an end to wasteful packaging, boosting reuse and recycling Available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7155?fbclid=IwAR17DTjpv2Z22Wf8tQ73xYvoQ7yjuvXVeT8kZhrYDEri9eMkrz4XJrS-eAA Accessed: 13 October 2024



and compostable plastics. Preventing packaging waste, increasing reuse and refill, and making all packaging recyclable are the targets by 2030.

The circular economy model fundamentally rethinks traditional consumption patterns. Rather than following the linear approach of taking, making, and discarding, it emphasizes keeping products and materials in use for as long as possible. By prioritizing activities like sharing, lending, reusing, repairing, reconditioning, and recycling, the circular economy reduces waste, conserves resources, and creates a regenerative system.

In this model, resources are cycled back into the economy, either by maintaining the original product's use or transforming its components into new products. This not only reduces the need for new materials but also diminishes the environmental impact associated with production and disposal. Businesses and consumers alike are encouraged to maximize the value of resources, shifting away from ownership towards access-based models.

The circular economy ultimately aims to design waste and pollution out of the equation, promote sustainability, and ensure that resource consumption aligns with the planet's ecological boundaries. It's a holistic, forward-looking model that emphasizes both economic and environmental resilience.

The Commission is proposing new EU-wide rules on packaging, to tackle this constantly growing source of waste. On average, each European generates almost 180 kg of packaging waste per year⁴. Packaging is one of the main users of virgin materials as 40% of plastics and 50% of paper used in the EU is destined for packaging. Without action, the EU would see a further 19% increase in packaging waste by 2030, and for plastic packaging waste even a 46% increase.⁵

The overall objective of the EU legislative proposal⁶ (2021) is to reduce the negative environmental impacts of packaging and packaging waste for the EU market. Specifically, the proposal aims to:

1. reduce the generation of packaging waste;
2. promote a circular economy for packaging in a cost-effective manner;
3. promote the uptake of recycled content within packaging.

The proposal introduces new rules regarding packaging placed on the EU market, specifically:

- **Recyclability:** all packaging placed on the market will have to be recyclable. The recyclability of packaging will be measured on a scale from A to E, where E corresponds to packaging that is not recyclable and therefore banned from the market.

⁴ <https://ewwr.eu/new-potential-measures-on-packaging-and-packaging-waste-in-europe/>

⁵ European Commission. (2019). Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee, and the Committee of the Regions- The European Green Deal. European Commission. Available at https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea8c1f-01aa75ed71a1.0002.02/DOC_1&format=PDF. Accessed: 13 October 2024

⁶ <https://www.europarl.europa.eu/legislative-train/theme-a-european-green-deal/file-new-circular-economy-action-plan>



- **Reusability:** all packaging placed on the market will have to be designed and used in such a way that it can be reused as many times as possible. Economic operators placing reusable packaging on the market will have to ensure that there is a system in place to reuse it. Furthermore, certain single-use packaging will be explicitly prohibited (e.g. single-use packaging for fresh fruit and vegetables, as well as miniature single-use packaging such as shampoo bottles).
- **Dimensions:** each packaging unit shall be reduced to the minimum dimensions in terms of weight and volume. It must be ensured that the empty space ratio does not exceed 40% of the total volume of the packaging.
- **Use of recycled content:** the plastic parts of the packaging shall contain a specified proportion of recycled content recovered from post-consumer plastic waste for each packaging unit.

Furthermore, regarding recyclability and reusability, it will become mandatory to affix:

- **Harmonised European symbols** on bins and packaging to indicate sorting, as well as on packaging to indicate reusability. This includes the obligation to add, by 1 January 2028, labels enabling the separate collection of each material.
- **QR codes** to be added to packaging to provide consumers with more information on the reusability of product packaging and to indicate collection points for recycling.

This extends the life cycle of products, helping to minimise waste. Once the product has completed its function, the materials from which it is made are in fact reintroduced, where possible by recycling. Thus, they can be continuously reused within the production cycle, generating further value.

1.2 What is packaging?

The functions of packaging are several:

1. to protect the product from damage during transport and distribution;
2. to provide product information such as ingredients, instructions for use, etc.,
3. to attract the consumer's attention
4. to promote the product.

The materials used for packaging can be made of different materials, such as paper, plastic, metal or glass, depending on the nature of the product and the needs of the consumer.

Packaging has a significant impact on the environment, both during production and disposal.

The production of packaging materials, such as plastic, requires large amounts of energy and generates polluting emissions. In addition, much packaging is not biodegradable and can take hundreds of years to decompose. Once products have been used, packaging becomes waste.

Packaging materials, particularly plastic, have significant environmental costs. The production process for plastic packaging is energy-intensive, typically relying on fossil fuels. This not only contributes to greenhouse gas emissions but also depletes natural resources. Additionally, most conventional plastics are non-biodegradable, meaning they can persist in the environment for hundreds of years, accumulating in landfills, oceans, and other natural ecosystems.

When disposed of, plastic waste can cause serious ecological damage. In oceans, for instance, it endangers marine life, as animals may ingest plastic particles or become entangled in larger debris. On land, plastic waste can contaminate soil and waterways, releasing toxic substances as it breaks down, which can affect both wildlife and human health. With this growing environmental awareness, there is a shift toward more sustainable packaging solutions. Biodegradable materials, recycled content, and alternative materials like paper, glass, or bioplastics are increasingly in demand. Similarly, innovations in packaging design are aiming to reduce material use and improve recyclability. For consumers and industries alike, reducing packaging waste is now seen as a critical component of broader sustainability efforts.

In recent years, to reduce the environmental impact of packaging, several tricks have been developed, such as choosing to use more sustainable packaging materials, such as: recycled cartons or biodegradable plastic.

It would also be important to reduce the amount of packaging used, for example by using reusable water bottles instead of single-use bottles.

Finally, good waste management can help to reduce the environmental impact of packaging. This includes the separate collection and recycling of packaging, as well as promoting the use of recycled packaging. It must include the promotion of sustainable practices in the production and disposal of packaging, and the adoption of policies that encourage the use of more sustainable materials and technologies.

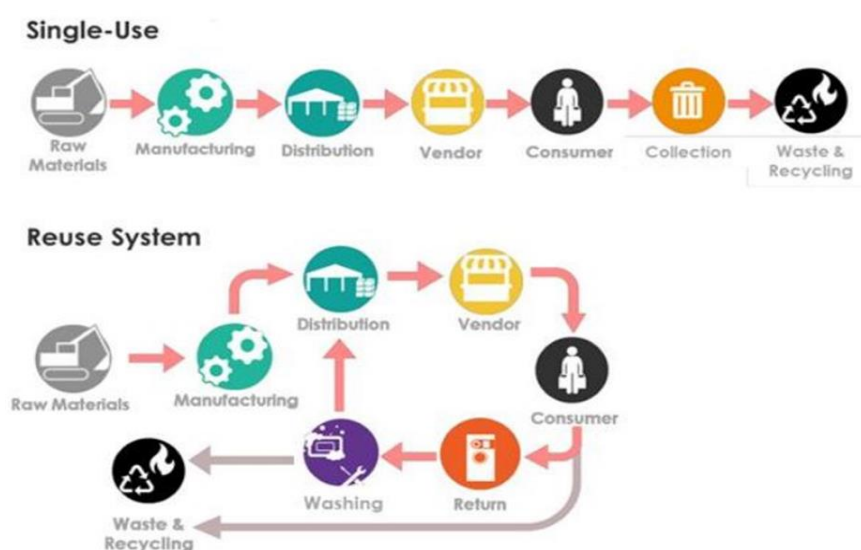


Figure 1: Lifecycle of Single-use Model and Reuse Packaging System

Source: Eunomia, Zero Waste Europe: <https://zerowasteurope.eu/library/decarbonisation-of-single-use-beverage-packaging/>

1.3 The green packaging

The shift toward green or sustainable packaging in Europe has been largely influenced by various European Union (EU) standards and regulations. The EU has implemented policies under its European Green Deal, Circular Economy Action Plan, and EU Packaging and Packaging Waste Directive, which encourage companies to adopt more sustainable packaging solutions. These policies target both the production and disposal phases of packaging, with goals to reduce waste, increase recyclability, and promote the use of biodegradable or renewable materials. The directive mandates that companies minimize packaging materials, use recyclable or compostable options, and reduce environmental impact through product life cycle assessment.

Many companies, both large and small, across various industries have responded to these standards by incorporating sustainable practices. All reflect the widespread adoption of green packaging as a response to EU standards and the push toward a circular economy across Europe.

As a result of the European standards, green packaging, also known as sustainable packaging, has been introduced. It is, indeed, a practice that seeks to reduce the environmental impact of packaging on the Earth. It focuses on using more sustainable materials and technologies, as well as reducing the use of materials and increasing the recycling and reuse of packaging. One of the main aspects of green packaging is the use of sustainable materials, i.e. the use of recycled materials, such as recycled cardboard, and biodegradable materials, such as cellulose and corn stool. In addition, there is an attempt to use materials with a low environmental impact, such as glass and aluminium, which can be easily recycled. In parallel to the use of sustainable materials, green packaging also focuses on reducing the use of materials. This can be achieved by designing products and packaging to reduce the volume and weight of packaging. In order to do this, efforts are also made to use modular packaging that can be easily disassembled and reassembled, which reduces the quantity of materials used.

The standard UNI EN 13432:2002 **‘Requirements for packaging recoverable through composting and biodegradation’** was created to fill some legislative gaps left by the previous directive 94/62/EC.⁷ Indeed, the European directive could be interpreted by individual legislators with the risk of generating misunderstandings or improper use of terms, especially the terms compostable and biodegradable. The actual definitions⁸ are:

- **Biobased:** points to the raw materials, or feedstock, used for their production. While conventional plastics are made from fossil resources (oil and natural gas), biobased plastics are made from biomass. The biomass currently originates mainly from plants grown specifically to be used as feedstock to substitute fossil resources, such as sugarcane, cereal

⁷ Legislative barriers for the recycling of fossil and biobased plastics for packaging, 2018.

⁸ European Union (2022). Synopsis report on the consultation on the policy framework on biobased, biodegradable and compostable plastic (2022) Luxembourg, for more details, see: https://environment.ec.europa.eu/publications/communication-eu-policy-framework-biobased-biodegradable-and-compostable-plastics_en

crops, oil crops or non-food sources like wood. Other sources are organic waste and by-products, such as used cooking oil, bagasse and tall oil. Plastics can be fully or partially made from biobased feedstock.

- **Biodegradable:** are designed to decompose at the end of their life by the conversion of all their organic constituents (polymers and organic additives) mainly into carbon dioxide and water, new microbial biomass, mineral salts and, in the absence of oxygen, methane.
- **Compostable plastics:** are a subset of biodegradable plastics designed to biodegrade under controlled conditions, typically through industrial composting in special facilities for composting or anaerobic digestion.

1.4 What is Circular Economy?

In February 2021, the European Parliament adopted a resolution on the new action plan for the circular economy, calling for additional measures to achieve a carbon-neutral, environmentally sustainable, toxic-free and fully circular economy by 2050. Stricter recycling standards and binding 2030 targets on material use and material footprint are also included.⁹



Figure 2. The Circular economy

Source: <https://repak.ie/driving-change/circular-economy-eu-legislation/>

⁹ European Commission (2020.) Available at: <https://eur-lex.europa.eu/legal-content/IT/TXT/?uri=CELEX:52020DC0098>



Circular economy refers¹⁰ to an economy whose sole objective is to minimise waste and optimise the use of natural resources by designing, producing and reusing products. It is based on three principles:

1. **Combat pollution and reduce waste:** most of the environmental impact depends on the decisions made at the design stage. Waste and pollution can be reduced by favouring new technologies and innovative materials.
2. **Preserve materials and products** so that they can be reused: the reuse, repair and regenerate products.
3. **Regenerate natural systems:** by aiming to do good (instead of just trying to reduce damage), we can actively improve the environment for the benefit of ecosystems and the earth.

¹⁰ <https://circulareconomyforfood.eu/en/>



2. European Waste Framework Directive

2.1 Introduction

The European Union Waste Framework Directive “WFD” (2018/851) supports the broader **EU circular economy initiative**, which aims to move the European economy toward sustainable production and consumption. On March 13th, 2024, the European Parliament approved its report on the EU WFD. This update of the WFD focuses on food and textile waste and carries significant novelties for both the companies producing waste as well as waste collectors. EU WDF proposes higher binding waste-reduction targets to be met at the national level by December 31st, 2030 - a reduction of at least 20% in food processing and manufacturing and a per capita reduction of at least 40% in retail, restaurants, food services and households.¹¹

2.2 Packaging and Packaging Waste Directive

In September 2022, under the Environmental Implementation Review, the Commission assessed the state of play of the transposition of the Packaging and Packaging Waste Directive (PPWD). It pointed out that there were differences in circularity rates (i.e. the share of material recycled and fed back into the economy) between Member States, with a 13% average EU-level rate for secondary use of materials.

Waste prevention is a significant challenge across all EU Member States, even those with high recycling rates, such as Germany, Austria, and Belgium. Despite leading in recycling, these countries still face issues with overall waste generation. High recycling rates can sometimes mask the underlying problem of overconsumption and excessive waste production, as recycling alone does not fully address the environmental impacts of waste.

To address this, EU policies emphasize waste prevention through measures like:

- Eco-design: Encouraging companies to design products with fewer materials and longer lifespans.
- Promoting reuse: Supporting repair and refurbishment industries to extend product life.

Extended Producer Responsibility (EPR): Holding manufacturers accountable for the life cycle of their products, incentivizing reduced waste in production and packaging.

¹¹ Feedback to the proposal for a targeted revision of the Waste Framework Directive, available at: https://zerowasteurope.eu/wp-content/uploads/2023/11/zwe_nov23_consultationresponse_WFDrevision.pdf

Countries with robust recycling systems are increasingly focusing on these waste prevention measures to reduce overall waste generation and move closer to a sustainable, circular economy.

On December 1st, 2022, European Parliamentary Research Service (EPRS) published an implementation appraisal on the operation of the PPWD.¹²



Figure 3. Waste hierarchy

Source: https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive_en

The PPWR adopted in Europe, pushes the distributors of take-away food and beverages to offer consumers a choice between reusable and disposable packaging. Starting in 2030, end distributors will commit to offer 10% of take-away food and beverages in reusable packaging. However, since the requirement is only a 'commitment' to do so, this is not a binding target. The PPWR also states that incentivising food and drink sellers to provide reusable packaging is a means of contributing to the EU packaging reduction targets (Member States are required to reduce the volume of packaging waste per capita by 5% by 2030, 10% by 2035 and 15% by 2040, based on 2018 levels).

The study *"Facilitating the Adoption of Takeaway Reuse Systems"*¹³ by Eunomia Research & Consulting and Zero Waste Europe analysed the potential and practicality of implementing reusable packaging systems in the takeaway food sector. Here are some key findings and recommendations from the study:

- **Environmental impact reduction:** it found that takeaway reuse systems, such as reusable containers, can significantly reduce single-use packaging waste and overall environmental impact. Reusable packaging systems contribute to lowering greenhouse gas emissions and decreasing waste in landfills and natural environments, especially when they replace single-use plastics and other disposables.

¹² [https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/745707/EPRS_BRI\(2023\)745707_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/745707/EPRS_BRI(2023)745707_EN.pdf)

¹³ Decarbonisation of Single Use Beverage Packaging (2023), Zero Waste Europe, Available at: <https://zerowasteurope.eu/library/decarbonisation-of-single-use-beverage-packaging/>

- **Challenges in implementation:** it highlighted barriers to widespread adoption of reusable systems, such as logistical issues, initial financial investments, and consumer convenience. Concerns over hygiene and return logistics for containers were also noted as challenges that need to be addressed.
- **Economic and operational viability:** for reusable systems to be viable, the report suggests that business models should be adapted to accommodate reuse. This could include deposit systems for reusable containers, partnerships with third-party providers to manage cleaning and redistribution, and incentivizing customers to return containers.
- **Supportive policy measures:** it emphasized the need for supportive policy frameworks, such as financial incentives for businesses that adopt reusable systems and potential restrictions on single-use items to encourage a shift toward reuse. It also calls for standardized guidelines across the EU to ensure consistent implementation of reuse systems and streamline processes for businesses and consumers.
- **Consumer engagement and education:** consumer behaviour is a major factor in the success of reusable packaging. The study suggests that awareness campaigns and incentives can help educate and motivate consumers to participate in reusable container programs actively.

This study has been instrumental in demonstrating the benefits and potential of reusable takeaway systems and provides a roadmap for policymakers and businesses to implement such systems in a way that balances environmental, economic, and operational considerations.

Finally, the main points are:

1. The costs associated with six different formats of single-use take-away packaging systems in comparison with reusable ones, starting with two city case studies (Berlin and Aarhus).
2. The policy instruments that could encourage a higher market uptake of packaging reuse systems.

Box 1. The case of Germany

The study of *Eunomia Research* mentioned how Germany has adopted fiscal policy measures on single-use packaging. Although it has been shown that EPR tariffs could result in lower costs for reuse packaging systems than for single-use systems, reuse systems have not yet achieved high levels of market penetration. Perhaps indicates that the impact of this type of tax intervention on vendor costs is insufficient to encourage high market penetration of reuse packaging systems.

Several complementary measures that can encourage gradual changes need to be increased. These include:

- ✓ the choice of re-use as the default option for shop packaging;
- ✓ the setting of meaningful targets for re-use;
- ✓ the establishment of an outright ban on single-use packaging.

2.3 Plastic use and data

The first **Global Plastics Outlook** by the OECD states that, while population and income growth is driving a relentless increase in the amount of plastic used and thrown away, policies to curb the dispersal of plastic waste into the environment are insufficient. It is reported that world produces double the amount of plastic waste compared to two decades ago, most of which ends up in landfills, incinerated or dispersed in the environment and only 9% is successfully recycled.¹⁴

The report shows that almost half of all plastic waste is generated in OECD member countries (currently 38). Plastic waste generated per capita annually varies on average from 221 kg in the United States, to 114 kg in Europe and 69 kg in Japan and Korea. Behind the 14% leakage of plastic waste would be the OECD countries, which within this percentage would be responsible for 11% of macroplastics and 35% of microplastics.

The crisis generated by Covid-19 led to a 2.2% decrease in plastic use in 2020, due to the slowdown in economic activities, but an increase in waste, mainly attributable to packaging for take-away food and medical equipment such as masks. Plastic waste usage started to recover with the economic recovery in 2021. Most plastics in use today are virgin materials, obtained from fossil sources. Even though the global production of recycled materials has more than quadrupled from 2000 to 2019, from 6.8 to 29.1 million tonnes, this amount still only represents 6% of the total plastic production.¹⁵

¹⁴ Global Plastics Outlook. Policy Scenarios to 2060 (2022), Available at :https://www.oecd.org/en/publications/global-plastics-outlook_aa1edf33-en/full-report.html

¹⁵ European Commission (2021), Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, Updating the 2020 New Industrial Strategy: Building a Stronger Single Market for Europe's recovery, COM (2021) 350 final.

The European Chemicals Agency (ECHA) identified risks from additives and the release of PVC microparticles, stating that regulatory action would be necessary. PVC is considered the most dangerous plastic because it has a huge impact on both the environment and health. It is produced from naphtha, natural gas or even coal, to obtain vinyl chloride monomer (VCM), which is a human carcinogen and which, despite improvements in production practices that have reduced its release, continues to be a concern because at the same time the amount of PVC produced has increased.

There are efforts to replace the most dangerous phthalates with others of the same family, but these are still untested, so reducing the use of PVC remains a priority.

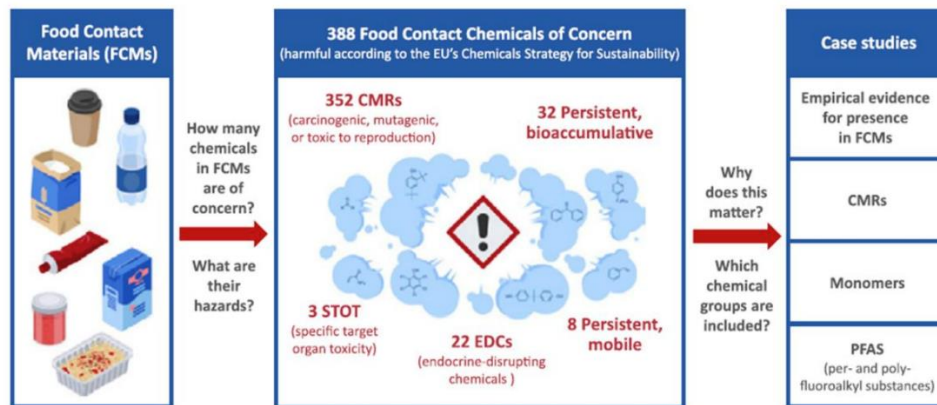


Figure 4. Chemical substances in packaging

Source: <https://www.sciencedirect.com/science/article/pii/S0304389422009578?via%3Dihub>

Eco-packaging, un-packaging, and the EU's Common Agricultural Policy (CAP) intersect as part of Europe's broader sustainability and environmental goals, especially regarding resource efficiency, waste reduction, and sustainable production.

Eco-Packaging and CAP

Eco-packaging refers to packaging that minimizes environmental impact, using materials that are biodegradable, recyclable, or derived from renewable sources. CAP encourages sustainable agricultural practices and resource efficiency, which aligns with using eco-friendly packaging in food and agricultural products.

Through CAP's sustainability-focused funding mechanisms, the EU provides financial support for agricultural businesses that adopt sustainable practices, including environmentally friendly packaging. This funding can be used by farmers and producers to invest in eco-packaging solutions, thus reducing the environmental footprint of agricultural products as they reach consumers.

Un-Packaging and CAP

Un-packaging refers to reducing or eliminating packaging entirely, often seen in bulk or zero-waste stores. CAP encourages the reduction of waste throughout the food supply chain, which includes reducing unnecessary packaging.



By reducing packaging at the source, agricultural businesses can contribute to CAP's goals of sustainability and waste reduction. CAP's framework for sustainable production incentivizes practices that contribute to circular economy principles, which includes eliminating unnecessary packaging for products wherever possible.

CAP's Role in Supporting Eco-Friendly and Un-Packaging Practices

CAP's current reform emphasizes environmental sustainability, with direct funding support for initiatives that contribute to the European Green Deal's goals. These initiatives include reducing single-use packaging and supporting circular economy practices, both of which overlap with eco-packaging and un-packaging concepts.

CAP's eco-schemes incentivize sustainable practices in farming and product processing, which can cover the use of sustainable packaging. Additionally, CAP encourages partnerships along the supply chain to minimize waste, which includes exploring un-packaging practices for certain products.

By fostering sustainable practices in agriculture and food production, CAP serves as a catalyst for adopting eco-packaging and un-packaging practices across Europe. This aligns with the EU's overall goals for waste reduction, circular economy, and environmental protection.

One of the key actions highlighted in the CAP reform is the enhancement of partnerships. The CAP 2023-27 aims to strengthen the position of farmers in the supply chain and boost the competitiveness of the agri-food sector by improving bargaining power. New rules reinforce producer cooperation, encouraging farmers to work together and enabling them to create countervailing power in the market.¹⁶

The food industry is increasingly aware of the importance of environmental sustainability. In this context, recycling and reuse of materials play a very important role in reducing the environmental impact of the entire production chain, from the factory to the consumer and the final company.

In this scenario, it is crucial to adopt practices that reduce environmental impact and promote sustainability.

2.4 Greenwashing and the implications for packaging companies

The European Commission, on March 22nd, 2024, recognised the seriousness of the greenwashing problem and proposed new rules to combat it. The rules aim to provide consumers with clearer and more reliable information on the sustainability of products to protect them and at the same time companies that operate in a truly sustainable manner.

The European Commission's new proposals on stricter rules for green claims impact a wide range of companies, particularly those in industries like retail, consumer goods, fashion, food and beverages,

¹⁶ European Commission (n.d.). The common agricultural policy: 2023-27. Available at: https://agriculture.ec.europa.eu/common-agricultural-policy/cap-overview/cap-2023-27_en. Accessed 13 October 2024



and electronics, where environmental claims are frequently made to attract eco-conscious consumers. Under these proposals, companies must substantiate their environmental claims with solid scientific evidence, covering the entire product life cycle - from production to disposal - to ensure accuracy and prevent "greenwashing."

The new proposals of the EC include:

- **Stricter rules for 'green claims':** companies will have to provide solid scientific evidence to support any environmental claims, avoiding vague or exaggerated terms. They will also have to assess the entire product life cycle, from production to disposal, to ensure that claims are complete and accurate.
- **Mandatory independent verification:** all environmental claims will have to be verified by independent and accredited third parties before being communicated to consumers. This will ensure the reliability of information and reduce the risk of greenwashing.
- **Regulating environmental labels:** the proliferation of different and often unclear environmental labels has created confusion among consumers. The new rules aim to limit this proliferation, allowing only new labelling schemes developed at European level and based on strict and transparent criteria.

The global focus on environmental sustainability has led to a significant increase in demand for 'green' products and services. In the packaging sector, this trend is reflected in an increasing focus on recycled, biodegradable, and compostable materials as well as production processes with a low environmental impact.

The new European standards represent a significant challenge for packaging companies but also offer important opportunities.

Challenges:

- **Increased transparency and accountability:** companies will need to be more transparent in communicating the environmental credentials of their products and take responsibility for ensuring the accuracy of the information provided.
- **Investment in independent verification:** companies will need to invest in independent verification processes to ensure compliance with the new standards.
- **Risk of penalties:** companies that do not comply with the new standards will risk fines and reputational damage.

Opportunities:

- **Competitive advantage:** companies that invest in sustainable practices and transparently communicate their environmental credentials will be able to differentiate themselves from competitors and gain consumer trust.
- **Increased sales:** consumers are increasingly willing to pay a higher price for sustainable products, and the new standards will facilitate their choice.
- **Improved corporate image:** a concrete commitment to sustainability can improve a company's image and attract new customers and investors.

Therefore, all enterprises should make sure that to guarantee that the packaging they choose is truly sustainable and complies with the new European regulations, it is important to consider the following aspects when choosing suppliers:

- **Transparency and traceability:** favour suppliers who offer clear and detailed information on the environmental impact of their products and processes, at all stages of the life cycle. Ask for documentation showing the origin of materials, the production processes used and how they are disposed of.
- **Sustainable innovation:** opt for suppliers who invest in research and development to create innovative and environmentally friendly packaging solutions. Verify the use of recycled, biodegradable or compostable materials and the adoption of energy-efficient production processes.
- **Transparent communication:** beware of vague or general statements on sustainability. Give preference to suppliers who provide concrete and verifiable data, supported by recognised environmental certifications.
- **Expertise and advice:** choose suppliers who demonstrate sound sustainability expertise and are able to offer personalised advice on which packaging solutions are best suited to your company's specific needs.
- **Independent verification:** ensure that suppliers' environmental declarations have been verified by independent, accredited certification bodies. This will ensure the reliability of the information and compliance with new European regulations.

3. Eco-packaging and Unpackaging

Eco-packaging and unpackaging are both strategies which aim at reducing the negative impact on the environment regarding the life cycle of a product, specifically within the agri-food industry. Here is a summary of what each concept means and how it could be beneficial for social economy entities:

Social economy entities (SEEs), which are organizations focused on social, environmental, and economic value rather than profit maximization, can play a crucial role in the promotion of eco-packaging and un-packaging. These entities include cooperatives, non-profit organizations, social enterprises, and fair-trade organizations. Here's how SEEs connect to eco-packaging and un-packaging practices:

3.1 Eco-packaging

This concept of packaging involves the creation of packages that will have the least environmental impact. This entails the use of materials that are¹⁷:

- **Biodegradable:** Materials that can decompose naturally into harmless elements such as compostable films or natural fibers.
- **Recyclable:** Packaging that has the potential to be processed into other new packaging materials to save on resources.
- **Reusable:** Packaging specifically made for repeat usages such as glass jars or sturdy containers that can be brought back by consumers for refilling or reusing them at home.
- **Minimal:** There is no more packaging than necessary, or designs which do not have excessive fillers, wrappers or labels.

Benefits for social economy entities:

The use of eco-packaging makes great strides in sustaining and enhancing the green movement, facilitating conscious purchasing among consumers, and even offering opportunities for waste management savings. For social economy entities, it is a way of demonstrating concern for both the environment and social values, particularly where such entities can obtain eco-friendly materials locally contributing towards the economy of that community.

¹⁷ FoodNavigator: Insights into biodegradable packaging solutions and the circular bioeconomy.
<https://www.foodnavigator.com/Article/2021/Food-packaging-Organic-recycling-hailed-the-most-sustainable-solution>

3.2 Unpackaging

The unpackaging concept aims to reduce packaging by devising ways to sell items in bulk and/or designing refillable systems around the products. It is common in zero waste shops but, in the case of agri-food, it is starting to appear as well since consumers are encouraged to come with their containers for example.

Illustrations of unpackaging in agri-food:

- **Bulk sales:** A farmers' market or a co-op outlet selling grains, spices, or oils in bulk can allow customers to come with their containers and purchase only what they require.
- **Refill stations:** Various other businesses have also been identified as having refill stations for oils, honey or dairy where customers refill the used bottles, jars and other containers.
- **Edible or minimal packaging:** Use of rice paper as an edible wrapper for some food products or use of nearly-naked wraps only when required.

Benefits for social economy entities:

Unpackaging can reduce scouting costs in terms of packaging and foster closer ties with the customers and minimize wastage. Unpackaging for the social economy entities is a way to spearhead the movement towards a circular economy as it helps to position the brand as a sustainable brand appealing to like-minded consumers. For a good number of social economy entities, the eco-packaging and unpackaging strategies, aligned with core values of sustainability and social responsibility, allow them to offer services to a wider clientele both on-site and through delivery. This combination not only aids to reduce cost and waste but also assists to form consumer bases, helping to encourage the community to be more sustainable over time.

3.3 Eco- packaging and social economy entities in the agri-food sector

Eco-packaging can bring high-returning dividends to social economics units within the agri-food system in both economic and social terms. Here are some of the ways it helps:

- **Decrease environmental impact:** The use of eco-friendly materials allows social economy entities to reduce their negative environmental impact, which complements their often-social impact driven initiatives. This approach aids in fostering sustainable practices in their respective communities, thus showing possibilities of ecological responsibility.
- **Environmental sustainability as a cross-cutting theme:** Eco-packaging may also improve the overall appeal of a brand since its target market can be customers who are willing to

purchase from companies that care about the environment. This can help social economy entities in building their market reputation and in customer retention¹⁸

- **Reduced cost in the long run:** Eco-packaging may be expensive for the initial stages but it has the tendency to save cost in the long run because it reduces disposal size and if materials are reusable or biodegradable it would save cost as well.
- **Support local economy:** There are many types of eco-packaging available to local jurisdictions so eco-packaging would help grow the local ecosystem. There will also be local employment opportunities as social economy entities will target local eco-packaging suppliers, stimulating job creation.
- **Educational awareness:** Emancipating people is among the primary concerns of many social economy entities, and there is no doubt that eco-packaging is a useful tool for fostering such thought. Through packaging and marketing their eco-friendly products, they would help in educating the general public on the need to use such eco-friendly products, which will in turn elicit interest in the larger community.
- **The relevance of the policy and availability of the funds:** Eco-packaging is directly in line with EU and global policy goals that are geared toward the advancement of the circular economy. Organizations that adopt eco-packaging products may have better chances of accessing funds, grants or even partnerships aimed at advancing sustainability in the agri-food industry.
- **Improving the social objective:** Since eco-packaging typically practices ethical sourcing and produces by default, it fits well the social objectives of many organizations that operate in social economy sectors. It advances one more dimension of sustainability, namely social value, in addition to environmental protection.

It is therefore promptly appropriate to conclude that by using eco-packaging tools and approaches, the social economy, entities from the agri-food sector are able to strengthen their social missions, cut their costs and enhance their competitiveness while contributing to a green economy.

Social economy entities often prioritise environmental sustainability, and eco-packaging aligns well with these goals. Some of the key connections are:

- **Sustainable product packaging:** Many social enterprises focus on offering products that are sustainably packaged, using recyclable, biodegradable, or compostable materials. For example, food cooperatives or social enterprises in the retail sector may adopt eco-packaging to align with their environmental values, benefiting both the planet and the local communities they serve.
- **Upcycled and Recycled Materials:** Social economy organizations often promote circular economy practices. This includes using recycled materials in their packaging and encouraging

¹⁸ Sustainable Product Packaging: Algramo employs smart dispensing systems to reduce single-use plastics, encouraging sustainable consumption.: <https://blog.movingworlds.org/social-enterprises-tackling-plastic-pollution/>

consumers to recycle. For example, a social enterprise might source packaging made from post-consumer recycled materials, which helps reduce waste while supporting the local economy.

- **Local sourcing and reduced environmental impact:** SEEs may prioritise local sourcing and low-carbon packaging alternatives, reducing the environmental footprint of transporting goods and packaging materials. They often focus on minimising waste throughout the product life cycle, which also includes choosing eco-friendly packaging.
- **Inclusive employment:** Many social economy organisations use packaging as an opportunity to create jobs for marginalized groups, such as people with disabilities or long-term unemployed individuals. These organizations can incorporate eco-packaging practices while offering valuable employment opportunities.

3.4 Un-packaging and social economy entities in the agri-food sector

The concept of un-packaging—reducing or eliminating packaging entirely—is also tied to the ethos of social economy entities, especially in terms of waste reduction and resource efficiency.

- **Bulk sales and refill stations:** Social economy entities often promote bulk-buying or refill stations, where customers bring their own containers to purchase products without packaging. For example, many zero-waste stores and food cooperatives are run by social enterprises, which embrace un-packaging practices to reduce waste and support sustainability.
- **Encouraging reuse and repair:** Social enterprises may also focus on repairing or reusing products, thus reducing the need for packaging altogether. For example, an organization that collects and repairs electronics could reduce the need for new packaging, contributing to the reuse economy. Similarly, businesses involved in second-hand goods can minimize packaging or use sustainable alternatives.
- **Community-led initiatives:** Social economy entities often run community-based initiatives that encourage local residents to reduce their consumption of single-use packaging. For instance, cooperative-run farmers' markets or bulk food stores may encourage consumers to bring reusable bags, containers, or bottles to avoid packaging waste.
- **Education and awareness raising:** Social economy entities can play a crucial role in educating consumers about the environmental impacts of packaging and encouraging them to adopt un-packaging practices. They may provide training, campaigns, or workshops on how to reduce packaging waste at the consumer level, further promoting sustainable behaviour in communities.

4. Best practices on food waste and circular economy

Social economy entities and eco-packaging/un-packaging are deeply interconnected, with SEEs often at the forefront of promoting sustainable packaging solutions and reducing packaging waste. Through their focus on environmental and social responsibility, these entities not only contribute to reducing waste and carbon footprints but also create positive social outcomes by fostering local economies, promoting fair trade, and encouraging community-wide participation in sustainability efforts. Their role in eco-packaging and un-packaging can lead to both environmental and social benefits, helping create a more circular and equitable economy.

Box 2. The Bella Dentro (Italy)¹⁹

Food waste is not just about food. To get food to our tables, numerous natural resources are invested, with a major environmental impact. With wasted food, resources such as water, fertilizer, soil, fossil fuels and energy resources of all kinds are also wasted.

Since 1974, food waste has increased by 50 percent, with billions of tons of food ending up in the dustbin. An analysis conducted by the FAO, shows that food waste in the world amounts to more than 1.3 billion tons per year - out of 3.9 billion tons of food produced, 1.3 end up in the trash.²⁰

Food waste has three critical points:

1. Food losses: covers losses upstream in the food supply chain;
2. Food waste: the waste that occurs during industrial distribution;
3. Household waste: purchased foods that are not consumed.

Food waste in Italy is of great concern. One year of food waste in Italy would feed forty-four and a half million people. According to scientific research from the University of Naples²¹ in 2012, food waste in Italy touched 1,226 million cubic meters of water used to produce the food that was then thrown away without being consumed. An incredible waste of water when one considers that the same amount of water could have met the annual water needs of 19 million Italians.

On the emissions front, 24.5 million tons of CO₂ are unnecessarily released into the atmosphere to produce food goods destined for the dustbin. The figures just reported are frightening, which is why solutions need to be found to reduce food waste and thus environmental impact and social inequality.

¹⁹ For more details, please visit Inside, B. (2022, May 17). Waste in the fruit and vegetable supply chain. Bella In. <https://www.belladentro.org/lo-spreco/>. Accessed: 13 October 2024

²⁰ <https://www.fao.org/newsroom/detail/FAO-UNEP-agriculture-environment-food-loss-waste-day-2022/en>
<https://onfoods.it/magazine/food-waste-rise-italian-households-findings-2024-report-waste-watcher-observatory>



The **Bella Dentro** project was born in 2018 from an idea of Luca and Camilla, two twenty-eight-year-olds, who managed to create a logistical network in the territory, buying ugly products at a fair price, directly from producers, and then reselling them directly to consumers, at a lower price than in supermarkets. The goal is to create a true alternative waste-free supply chain that starts from the field and reaches the table, where every step is guaranteed, transparent and respectful of the “inner beauty” of the products.

For a year and a half, Luca and Camilla drove all over Milan in their bee car to sell fruits and vegetables. The feedback was immediately positive, people were intrigued and came by to taste their products, later becoming customers. So, they decided to open a physical store in **Milan**, so they could save more and more fruits and vegetables. In 2020, they succeeded in creating the first line of processed products, so they can store fruits and vegetables longer and thus avoid generating waste in turn. Anything that remains unsold is donated to neighbourhood charities. The workshop in which the products are processed is also not left to chance. The products are processed by the Social Cooperative, which trains and employs children and adults with autism or severe cognitive retardation.

Box 3. Solinatra (United Kingdom)²²

Solinatra is a company that aims to facilitate the transition to a circular and sustainable economy for those companies seeking alternative materials to disposable plastic. In fact, Solinatra's various patented biomaterials are suitable for containing food and organic materials without compromising their qualities and lend themselves to the injection moulding process. This makes them perfect for those businesses that have already invested in machinery and technology for the large-scale production of disposable utensils in the food sector (such as espresso pods, coffee lids, disposable cutlery, etc.), but wish to transform themselves into more sustainable and less polluting companies without having to reinvent the entire production chain.

Bio-based materials or biomaterials are derived partially or entirely from biomass and do not consist of components of fossil origin. Bio-based materials derive partially or entirely from bioproducts. These elements, being made of renewable materials, can help reduce CO₂ and offer other advantages such as low toxicity and biodegradability.

At the European level, the bio-based products sector is considered a priority as it represents an opportunity for the economy to be more sustainable and reduce its dependence on fossil fuels. According to European Commission estimates, bio-based products and biofuels generate annual revenues of approximately EUR 57 billion and employ 300,000 workers.

The production costs of these bioplastics are still high, but companies like Solinatra are heading in the direction of a future of non-polluting disposable products.

²² For more details, please visit <https://www.solinatra.com/> Accessed : 13 October 2024

Box 4. Sufresca (Israel)²³

Sufresca is an innovative company specialising in the production of natural, edible food coatings with the aim of offering a sustainable alternative to single-use plastic. Its mission is to address the problem of food waste and the environmental impact of plastic packaging in the food industry. Its main focus is on replacing plastic packaging used in the food industry, as around 70% of the plastic used in this sector ends up in the seas and oceans. Its biodegradable liners are made exclusively from natural ingredients and are water-soluble, offering a convenient alternative for packaging foodstuffs such as fresh fruit and vegetables. Due to their biodegradability, the liners can be disposed of with organic waste instead of traditional plastic.

In addition, Sufresca has developed a patented method to make its liners water-resistant, allowing them to be used to contain liquids and semi-liquids. The seaweed used to produce the liners is cultivated in an ecologically and socially sustainable manner, ensuring fair compensation for the farmers and contributing to the improvement of their living conditions. Sufresca is committed to several key objectives, including increasing the income of raw material farmers, preserving and expanding clean coastal areas, and reducing plastic waste and CO² emissions produced in Indonesia. Its work has been recognised with several awards, including the Social Venture Challenge Asia and the Circular Design Challenge, highlighting its commitment to innovation and sustainability.

Box 5. Imperfect Foods (United States)

Imperfect foods is an innovative company that has quickly established itself in the food waste sector. To date, the company has saved more than 79,000 tonnes of imperfect food and has 400,000 consumers.

The company's main goal is to reduce food waste. To do this, the company connects agricultural producers directly with consumers. It offers consumers food that is aesthetically imperfect but edible.

Imperfect Foods implements a business model based on subscriptions, which can be customised according to one's needs and food preferences. Customers can choose from numerous types of fruit, vegetables, meat, dairy products and more each week.

Another focus of this company is definitely on environmental sustainability. They work hard to reduce the environmental impact in their production and distribution processes, minimising the use of plastic and collaborating with local charities to which they donate excess food.

This company is committed to educating the public about the big problem that is food waste and tries to promote more conscious and sustainable consumption.

²³ For more details, please visit: <https://sufresca.com/>. Accessed 13 October 2024



Find more on the
Grains Project
[https://www.diesis.
coop/grains/](https://www.diesis.coop/grains/)

Partners

- Diesis Network - Coordinator
- Asociația Centrul Pentru Legislație Nonprofit (Romania)
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