

ROSETTA

Reducing food waste due to marketing standards through alternative market access

D5.1 Policy recommendations – initial policy briefs

Eucofel

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Abbreviations

Table 1: Abbreviations

AI	Artificial Intelligence
B2B	Business to Business
CAP	Common Agricultural Policy
CMO	Common Market Organisation
CSOs	Civil Society Organisations
D	Deliverable
DG SANTE	Directorate-General for Health and Food Safety
EEA	European Environment Agency
EFSA	European Food Safety Authority
EIP-AGRI	European Innovation Partnership for Agricultural Productivity and Sustainability
EP	European Parliament
ESG	Environmental, Social and Governance
EU	European Union
EUCOFEL	European Fruit and Vegetable Trade Association
EU-FLW	European Union Food Loss and Waste strategy
FAO	Food and Agriculture Organization
FLW	Food Loss and Waste
FUSIONS	Food Use for Social Innovation by Optimising Waste Prevention Strategies
GA	Grant Agreement
GDPR	General Data Protection Regulation
HLPE	High Level Panel of Experts
ICT	Information and Communication Technologies
IoT	Internet of Things
IPCC	Intergovernmental Panel on Climate Change
MIPs	Multi-Actor Innovation Platforms
MS	Member States
NGOs	Non-Governmental Organizations
OECD	Organisation for Economic Co-operation and Development
PEFCR	Product Environmental Footprint Category Rules
REA	Research Executive Agency
RTA	Reflexive Thematic Analysis
SDGs	Sustainable Development Goals
SMEs	Small and Medium-sized Enterprises
UNEP	United Nations Environment Programme
UTP	Unfair Trading Practices
WP	Work Package
WRAP	Waste and Resources Action Programme

Executive Summary

Marketing standards, both public and private, play a critical role in defining the quality and appearance criteria of food products placed on the market. However, these standards (especially those related to aesthetic characteristics) often lead to the exclusion of perfectly edible but non-conforming products, contributing to significant levels of avoidable food waste across the value chain. Despite growing attention to this issue, there is limited policy guidance and harmonised regulation at EU level to effectively address it.

The ROSETTA Project (*Reducing food waste due to marketing standards through alternative market access*) aims to identify, validate and promote alternative approaches to food marketing standards that currently contribute to food waste. Deliverable 5.1 *Policy recommendations – initial policy briefs* lay the groundwork for Deliverable 5.2 *Policy recommendations - final*, which will provide fully validated and updated policy briefs in the final phase of the task. It focuses on translating the empirical findings and lessons learned across previous Work Packages (WP1, WP2, and WP3) into a clear and evidence-based set of policy recommendations, which are directed at:

- Policy makers at EU and national levels;
- Public authorities setting mandatory marketing rules;
- Private standard owners (retailers, certification schemes);
- Stakeholders in the food value chain (farmers, cooperatives, processors, retailers).

The approach adopted for Deliverable D5.1 responds to the need for systemic transformation. It goes beyond isolated case studies, offering a comprehensive and actionable framework to enable the valorisation of suboptimal food, improve the coherence of marketing standards, and reduce systemic barriers that hinder innovation and sustainability in food systems. Its main objective is to translate the results from previous research activities into a structured and evidence-based set of policy recommendations aimed at reducing food loss and waste (FLW) related to marketing standards. These were identified with the application of Reflexive Thematic Analysis (RTA), a qualitative method used to identify key themes and patterns across the data. To this end, this document aims to:

- Provide solid, transdisciplinary evidence on the impact of marketing standards on food waste;
- Co-develop sustainable solutions to valorise food that does not meet standardised criteria;
- Support knowledge transfer and replication of successful practices;
- Influence the revision or design of marketing standards at EU and national levels.

Based on this thematic framework, the document presents an initial list of actionable policy recommendations, organised into five key theme groups:

1. Food supply chain;
2. Private and public standard goals;
3. Suboptimal product consumption;
4. Food waste reduction;
5. Education and collaboration.

The structure of this document is as follows:

- **Section 1** presents the methodological framework and thematic step analysis;
- **Section 2** presents a categorisation of findings from previous deliverables to reduce food waste;
- **Section 3** introduces the list of thematic groups to develop policy recommendations and the thematic map;
- **Section 4** contains a brief policy recommendation and outlines the consultations that could be raised in co-creation round tables;
- **Annex I** contains a detailed review of evidence from previous WPs, which substantiates the recommendations presented in Section 2.

1. Methodological approach

1.1 Introduction

Food loss and waste (FLW) represent a major sustainability challenge across the European food system, with significant environmental, economic, and social implications. One of the key drivers of avoidable FLW is the current set of marketing standards—both public and private—that shape what food products are considered acceptable for commercial distribution and consumer purchase. These standards, often focused on cosmetic attributes or rigid classification systems, can result in the systematic exclusion of edible but non-conforming products.

The ROSETTA project addresses this challenge by seeking alternative approaches to food marketing standards, aiming to enable the valorisation of suboptimal foods, improve market access, and reduce waste throughout the food supply chain. Within this context, Deliverable D5.1 *Policy recommendations – initial policy briefs* aims to translate the empirical findings and knowledge developed in previous Work Packages (WPs 1, 2, and 3) into a first version of actionable policy recommendations, which will later be finalised in Deliverable D5. 2 *Policy recommendations final*

1.2 Methodological process

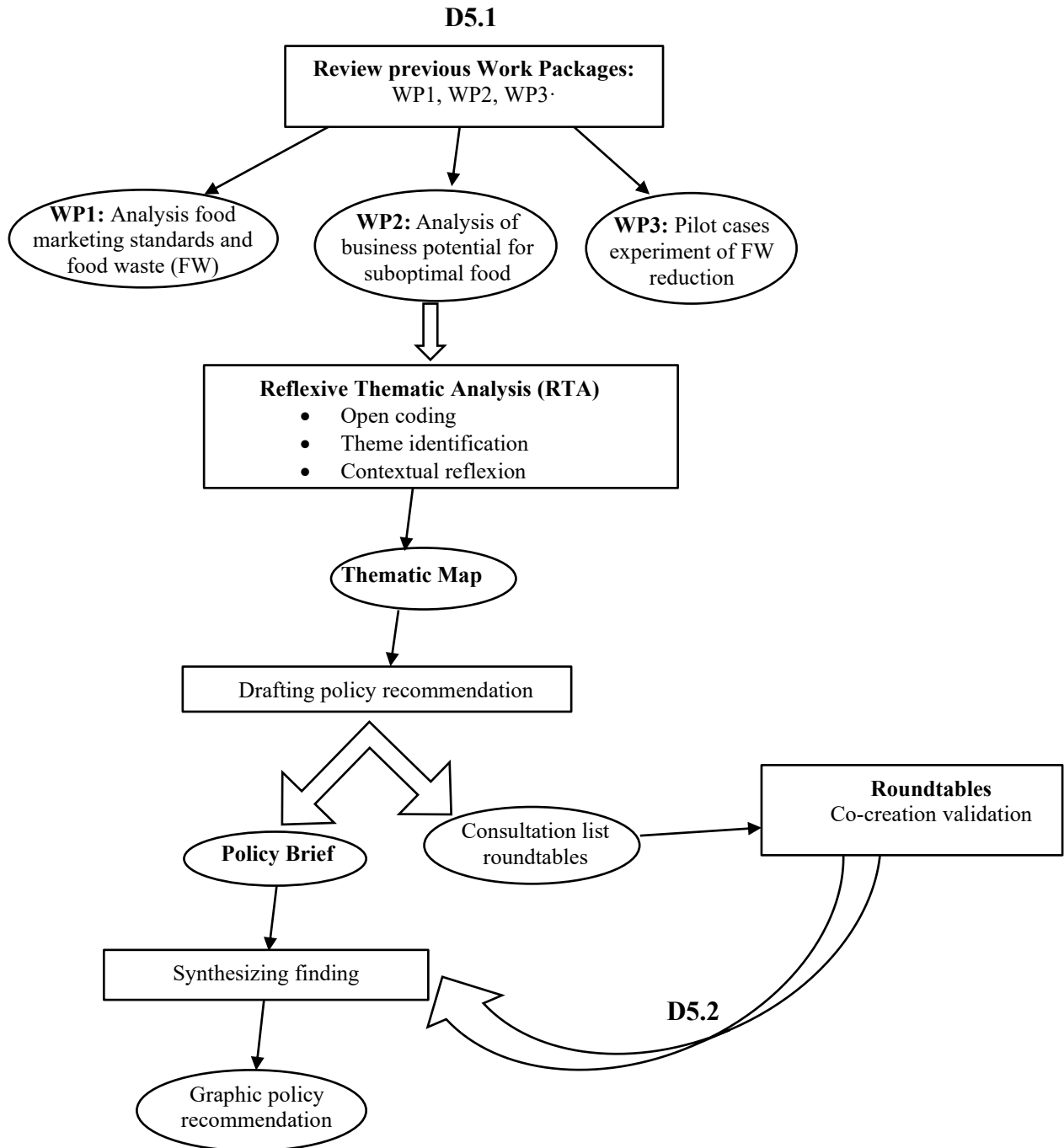
The methodology used for preparing Deliverable D5.1 *Policy recommendations - initial policy briefs* is designed to systematically analyse existing standards and practices, identify gaps and barriers, and develop actionable recommendations for food systems transformation.

The methodology prioritises feasibility, relevance, and stakeholder involvement, ensuring that the policy recommendations are both grounded in evidence and aligned with the real-world needs of industry actors, policymakers, and consumers.

The process is iterative and participatory, following a clear path from initial data review to final recommendations, with an emphasis on co-creation and collaborative engagement with stakeholders.

Figure 1 below shows an outline of the methodological process followed in preparing D5.1

Figure 1: Methodological process



1.2.1 Review of previous Work Packages

The foundation of the methodology lies in a thorough review of the outputs from previous Work Packages (WP1, WP2, WP3). These Work Packages provide a substantial evidence base that highlights the key challenges and opportunities in reducing food loss and waste across the food supply chain.

- **WP1: Analysis of current situation regarding food marketing standard and food waste**
WP1 focuses on the regulatory framework for food marketing standards, including both public and private regulations that impact food waste. The review examines how these regulations contribute to food loss through stringent cosmetic quality standards or mismatches between market requirements and actual consumer demand.
- **WP2: Analysis of business potential for suboptimal foods that do not meet marketing standards but are safe to eat**
WP2 assesses best practices and alternative models for handling suboptimal food. This includes the identification of innovative market solutions, such as the creation of secondary markets for imperfect products and circular economy initiatives. The findings from WP2 provide insights into which market-driven approaches can reduce food waste and how these strategies can be integrated into current regulatory frameworks.
- **WP3: Operational plan of use case pilot experiments of food waste reduction solutions with business potential in use cases**
WP3 evaluates the outcomes of pilot projects and interventions aimed at reducing FLW. It includes testing the feasibility of new marketing standards, consumer behaviour changes strategies, and technological innovations. The review of these pilots will help identify practical, scalable solutions that have been tested and validated in real-world settings.

By reviewing these deliverables, we have extracted key findings regarding the barriers to reducing FLW, the role of standards, and the effectiveness of various interventions. This evidence has served as the basis for the formulation of policy recommendations, ensuring that they are built on a comprehensive understanding of the current state of food marketing practices, regulatory environments, and consumer behaviour.

A detailed synthesis of the evidence supporting the identified themes of WP1, WP2 and WP3 is presented in **Annex I Consolidation of findings from previous Deliverables**.

We have obtained a consolidated list of findings, and a clear understanding of the challenges and opportunities related to marketing standards and food waste reduction. This review has also identified key areas that require further analysis and policy intervention.

1.2.2 Reflexive Thematic Analysis (RTA)

Once the relevant data was gathered through the review of WP1, WP2, and WP3, the next step was to apply Reflexive Thematic Analysis (RTA). This is a qualitative research method that facilitates the identification and interpretation of patterns, themes, and meanings within complex datasets.

RTA emphasises the importance of the researcher's awareness of their role in the analysis process. This means reflecting on how their background, including social, cultural, and professional factors, may influence the interpretation of the data. In the context of the ROSETTA project, this approach provides a deeper understanding of the findings, helping to identify emerging patterns and key themes.

- **Open Coding:** The first step in the analysis process is the open coding of data. This involves reading through the findings from WP1, WP2, and WP3 and identifying initial codes that capture key aspects

of the data. These codes will relate to specific barriers or solutions, such as the need for more flexible standards, the potential for market incentives, or the effectiveness of public awareness campaigns.

- **Theme Identification:** After coding the data, the next step is to group the codes into broader, more coherent themes. For example, themes may include: "marketing standards", or "consumer behaviour", etc. These themes will help to structure the subsequent policy recommendations and provide a framework for addressing the different facets of food loss and waste.
- **Contextual Reflection:** In RTA, it is essential to reflect on the broader context in which the findings emerge. This involves considering how societal values, economic structures, and political ideologies influence the identified themes. For instance, the cultural perception of food quality and its impact on consumer acceptance of imperfect food products is a key consideration in shaping the policy recommendations.

A set of key themes and subthemes that have emerged from the data, along with a reflective analysis of how these themes relate to the broader context of food systems and policy.

1.2.3 Thematic Mapping

After identifying the key themes, the next step was to visually map these themes and identify any gaps that require intervention in the current policies and practices related to food marketing standards and food waste reduction.

This map visually represents the relationships between the different themes and highlights any critical gaps that may exist. This exercise provides clarity on the areas that require policy innovation and forms the basis for targeted interventions.

1.2.4 Drafting Policy recommendations

Building on the thematic analysis, the next stage involved the formulation of policy recommendations. These recommendations address the barriers and opportunities identified in the previous steps, providing actionable strategies for policymakers. The recommendations are grounded in the findings from the project and will be practical, feasible, and tailored to the needs of various stakeholders. For example, recommendations involve regulatory reforms, the creation of new market incentives, or the development of consumer education campaigns. Each recommendation is linked to a specific actor (government, industry, or civil society) responsible for its implementation.

1.2.5 Preparation of themes for validation in a co-creation process

To ensure the relevance and feasibility of the proposed recommendations, a key step is to develop a comprehensive list of themes to be validated through a co-creation process, which will be carried out by Eucofel during the 4th semester of the project. This process will involve organising roundtable discussions with a diverse range of stakeholders, including policymakers, industry leaders, consumer groups, and experts. The primary focus of these roundtables will be to review and refine the themes identified earlier, ensuring that they reflect the real-world challenges and opportunities related to food loss and waste.

Prior to the roundtables, the project partners, specially the WP1, WP2, and WP3 leaders, were consulted and collaboratively assessed the identified themes, provided feedback, and highlighted any areas that required further clarification or adjustment. This collaborative approach ensures that the themes proposed for action

are not only grounded in evidence but also align with the needs and perspectives of those who will play a role in implementing them.

The preparation of these themes is an essential step to guarantee that the final recommendations are practical, actionable, and have broad support from key actors within the food system.

1.2.6 Synthesising the findings into communication materials

After the recommendations were validated, the final step involved synthesising the findings into clear, concise communication materials. These materials, such as one-pager graphic figures policy briefs, have been designed to effectively communicate the recommendations to a wide audience. They can be found in Section 4 and will be easily available on the project website. The aim is to facilitate the uptake of the recommendations by policymakers, industry stakeholders, and the public, driving action toward the reduction of food loss and waste.

In summary, the methodology designed for D5.1 integrates a systematic review of prior work undertaken within the ROSETTA project, reflexive thematic analysis, project partner engagement, and clear communication to ensure that the final policy recommendations are both grounded in evidence and practically applicable. This comprehensive approach provides a robust framework for addressing the challenges of food loss and waste while ensuring that proposed solutions are inclusive, actionable, and supported by all relevant stakeholders.

2. Categorisation of finding to reduce food waste from previous deliverables

This document presents an adapted classification of policy themes to ensure consistency with the broader analytical framework used in the project. The objective is to establish a coherent and traceable link between overarching policy priorities and the more detailed findings generated through previous research and stakeholder engagement activities.

The thematic grouping process aimed to transform a broad set of analytical insights into a structured and policy-relevant framework. Using Reflexive Thematic Analysis (RTA), we moved from an initial coding phase to the definition of six coherent and actionable thematic patterns. This transition was not mechanical, but the result of iterative reflection, interpretive judgement, and validation against the project's objectives and empirical base.

The process began with the identification of six initial codes. These codes reflected the key conceptual pillars recurrently observed across the findings of previous Work Packages (WP1–WP3).

Through iterative analysis, we assessed the degree of overlap, interdependence, and complementarity between these codes.

The result is a theme framework that preserves the richness of the evidence while improving clarity and policy relevance. This framework now serves as the structure for formulating recommendations, planning co-creation activities, and preparing the policy briefs that will be finalised in Deliverable D5.2.

Detailed descriptions of key insights and recommendations extracted from previous project deliverables are included in the Annex I.

2.1 Initial codes from Deliverables

2.1.1 Public and private marketing standards

- Deliverables 1.2 “Analysis of EU, international and national marketing standards” and 1.3 “Analysis of private food marketing standards”, highlight that both EU public marketing standards and private retailer-driven standards continue to exclude substantial quantities of edible food from the market, mainly due to aesthetic and size requirements.
- D1.4 “Estimation models of food waste generated by marketing standards”, adds empirical weight, offering estimation models that quantify the losses generated by these standards—particularly in fruit and vegetable chains. These models show that even small adjustments to specifications (e.g., size tolerance) could significantly reduce food losses.
- D3.1 “Operational plan of use case pilot experiments”, supports the operational feasibility of reforming marketing standards, noting that pilot projects with adjusted specifications are technically viable and welcomed by many supply chain actors, especially when paired with consumer education or public procurement incentives.

Policy implication: Reforms to standards must be supported by both evidence (as provided by D1.4) and tested in real-world contexts (as proposed in D3.1), ensuring that changes are both impactful and implementable.

2.1.2 Date marking and product life management

- D1.2 identified that rigid interpretations of “Best Before” and “Use By” dates contribute to premature withdrawal and disposal of food.
- D1.4 confirms this quantitatively, estimating that 5–10% of food waste at retail and household level is linked to confusion or rigid compliance with these date labels.
- D3.1 recommends operational guidelines for redistribution and donation that include freezing, relabelling, and traceability protocols to extend product life and reduce legal uncertainty around donating near-expiry food.

Policy implication: Harmonised EU guidance on date marking and redistribution protocols is critical and should be supported by technical instructions and traceability tools that consumers can implement confidently.

2.1.3 Suboptimal food marketing and redistribution

- D2.1 documented a range of good practices for marketing suboptimal food through prevention, redistribution, and transformation.

- D1.4 quantifies the recovery potential of these pathways by simulating waste reductions under scenarios where surplus or imperfect foods are processed or redirected.
- D3.1 identifies redistribution as an underutilised solution, citing logistical, legal, and economic barriers that must be addressed. It calls for investment in infrastructure, clearer legal protocols, and coordination platforms.

Policy implication: Redistribution must be integrated into standard food chain logistics and regulations, and supported through public procurement, technology platforms, and incentives.

2.1.4 Stakeholder collaboration and alignment

- D1.1 mapped key stakeholder roles and demonstrated openness to change, especially through Multi-Actor Innovation Platforms (MIPs).
- D3.1 operationalises these findings, proposing pathways for voluntary agreements, pilot projects, and intersectoral coordination (e.g., public-private agreements modelled after the Courtauld Commitment).
- Stakeholders emphasised the need for both top-down coordination (from the EU) and bottom-up facilitation (e.g., tools, templates, and recognition schemes).

Policy implication: Stakeholder collaboration mechanisms should include both voluntary frameworks and public policy support, underpinned by clear roles, incentives, and shared indicators.

2.1.5 Data, monitoring, and evaluation

- D1.4 provides one of the most concrete contributions here, proposing modelling tools that enable the quantification of food loss attributable to marketing standards, and simulations to test the effects of standard reforms or redistribution pathways.
- These models can be adapted for use in Member State reporting systems, sector-specific audits, or EU-wide indicators.
- D3.1 complements this by identifying a lack of data integration between surplus food flows, redistribution actors, and national policy frameworks.

Policy implication: A target measure act approach for food waste reduction should incorporate standard-related metrics and build capacity for real-time monitoring and impact evaluation of marketing reforms.

2.1.6 Transparency and consumer awareness

- D2.1 and D1.3 found that consumer perception remains a major barrier to marketing suboptimal food.
- D3.1 reinforces that retailers fear reputational damage if they market “imperfect” food, despite growing evidence of consumer openness. It calls for EU-level awareness campaigns and public engagement strategies.

- D1.4 adds that cosmetic standards and date labelling shape consumer behaviour long before the point of sale, influencing shopping and disposal practices at home.

Policy implication: Public campaigns and in-store nudging strategies must go together with standard reforms, helping reshape consumer expectations around appearance, shelf life, and quality.

3. List of themes to develop policy recommendations

This section delves into the key themes identified by the project that contribute to optimising food standards, with a particular emphasis on the revision of aesthetic standards, the promotion of alternative markets for suboptimal foods, addressing systemic barriers, and enhancing consumer education and engagement.

The following sections will elaborate on both the direct and indirect actions needed to achieve food standards optimisation, offering actionable recommendations for policy makers, industry leaders, and consumers. These insights provide a holistic framework to transform food systems, minimise waste, and support the efficient use of resources.

3.1 Thematic grouping for classification of policy brief recommendation

In alignment with the methodology outlined in Section 1, this section presents an initial grouping for classification of policy brief recommendations. This classification reflects both the directly food-standard-related measures and the indirect supporting enablers, ensuring traceability between empirical findings and actionable proposals. This analysis conducts an in-depth analysis in order to subsequently create a thematic map.

The policy briefs address the dual objective of ROSETTA: reducing food waste caused by marketing standards and enabling systemic change through innovation, governance, and consumer engagement.

3.1.1 Public and private marketing standards

3.1.1.1 Reform cosmetic quality standards in the food supply (Direct Action: DA)

Revise EU marketing standards to ease overly strict aesthetic requirements—such as size, shape, or colour—that lead to the exclusion of edible yet "imperfect" produce from the market. These cosmetic criteria, along with rigid date labelling, contribute significantly to food waste, particularly in the fruit, vegetable, and bakery sectors. A large proportion of avoidable waste results from the rejection of products based on appearance and confusion around expiry dates, underscoring the need for more flexible and prevention-oriented standards.

The reform should redirect the focus from visual uniformity to essential aspects such as nutritional values and food safety. Especially private standards often impose specifications that go beyond what is necessary, reducing the range of acceptable products. Allowing greater variability in appearance would enable more produce to be marketed, helping to reduce food loss across the supply chain.

3.1.1.2 Standardise data marking and product life in redistribution protocols (DA)

Adopt harmonised operational guidance for the use of “Best Before” and “Use By” dates, which is currently a requirement in private standards. Clarify legal frameworks across the EU to support the redistribution of food past its “Best Before” date—backed by clear quality assessment protocols—and to facilitate freezing and re-labelling of “Use By” items prior to expiration. This is particularly important for redistribution models that repurpose surplus food in catering, food banks, or institutional kitchens.

Additionally, standardising these practices can help resolve current ambiguities in date labelling, which often lead to unnecessary food waste. Promote the adoption of user-friendly tools for businesses to improve donation and surplus redistribution logistics. Reassess rigid date-marking rules within marketing standards—such as the 28-day “Best Before” limit for eggs or 21-day sale restrictions—to ensure labelling reflects actual shelf life and food safety, rather than causing premature disposal.

Clear and consistent date labelling across all Member States is essential to help both consumers and businesses manage food more effectively and reduce waste. Often, overly cautious or misinterpreted labels result in the disposal of products that remain safe to eat. A unified approach—spanning both public regulations and private practices—would minimise unnecessary food loss.

3.1.1.3 Integrate waste reduction into EU agri-food policies (Indirect Action: IA)

Embed food waste prevention as a central objective in European food and agricultural policy frameworks, such as the Common Agricultural Policy (CAP) and related regulations. This involves treating low levels of waste generation as a benchmark for efficiency in both farming and distribution, acknowledging that a system allowing avoidable losses cannot be considered truly efficient.

Incorporating waste-reduction criteria into CAP guidelines and other EU standards would encourage producers and Member States to maximise the use of all edible outputs. Integrating these principles into the broader agri-food policy landscape would also create a supportive regulatory environment for optimising food standards, promoting sustainability, and advancing circular economy goals.

3.1.1.4 Encourage responsible marketing and retail practices (IA)

Use EU policy instruments to discourage promotional practices that unintentionally contribute to food waste, such as aggressive bulk offers (e.g., “buy one, get one free”) that lead to over-purchasing. Consider establishing guidelines or regulatory limits on marketing tactics known to generate waste and promote sales strategies that align commercial objectives with sustainability. For example, retailers could implement dynamic pricing for products nearing their “Best Before” date, encouraging timely consumption and reducing losses.

It is also crucial to reassess how food standards are applied at the point of sale. Retailers can play a key role by adopting responsible marketing approaches—such as highlighting suboptimal products through targeted campaigns or product placement—and by adjusting labelling and discount strategies. These measures can help shift consumer behaviour towards purchasing items that, while outside conventional aesthetic norms, remain entirely safe and nutritious.

3.1.2 Innovation and market diversification

3.1.2.1 Promote secondary markets for suboptimal food marketing (DA)

Create incentives and strengthen support for alternative market channels that can absorb food not meeting conventional retail standards, including financial incentives for producers and farmers' cooperatives to process or market suboptimal foods. This includes launching dedicated product lines for cosmetically imperfect produce (e.g., “ugly” fruits and vegetables sold at a discount) and scaling up food processing or upcycling initiatives that transform surplus or off-grade items into value-added products such as soups, sauces, or juices. Expanding these outlets would allow a greater share of the harvest to reach consumers, rather than being discarded due to overly strict specifications.

Public procurement can also serve as a strategic lever by incorporating surplus or suboptimal products into institutional catering services—such as schools, hospitals, or public canteens—where cost-effectiveness and nutritional value are key.

Although suboptimal foods are often safe and nutritious, they are frequently excluded from mainstream distribution because of aesthetic or uniformity criteria. Promoting secondary markets—through supermarket sections, online platforms, or dedicated discount stores—can help reduce food waste, offer affordable alternatives to consumers, and contribute to a more resource-efficient food system.

3.1.2.2 Support technological innovation to reduce waste (IA)

Promote the adoption of smart technologies and advanced packaging solutions that enhance food marketing and extend product shelf life. Digital tools—such as barcode or QR scanning systems and mobile applications—can help identify items nearing expiration and enable targeted discounts, preventing edible food from going to waste. Likewise, innovations in storage and packaging, including improved Modified Atmosphere Packaging and edible coatings, can preserve freshness without compromising safety.

EU research and innovation programs should prioritise scaling up these technologies across the food supply chain. In addition, automated sorting systems can support more flexible food grading practices, aligning with consumer preferences while reducing unnecessary rejection of quality products.

These advancements—spanning preservation, pricing strategies, and product handling—play a key role in waste prevention. By investing in such solutions, the EU can support the adoption of more flexible food standards and improve resource efficiency throughout the system.

3.1.2.3 Leverage public procurement to drive waste reduction (IA)

Incorporate food waste prevention criteria into EU Green Public Procurement standards and other guidelines for public institutions, such as schools, hospitals, and government canteens. For example, food service tenders could include requirements or incentives for using seasonal produce, cosmetically imperfect items, or surplus ingredients in meal preparation. Embedding these criteria into procurement practices—and aligning them with initiatives like the EU Ecolabel for food services—would help create stable demand for non-standard products, normalise their inclusion in public menus, and position the public sector as a leader in food waste reduction.

3.1.3 Stakeholder collaboration and alignment

3.1.3.1 Aligning private standards with public goals (DA)

Promote greater alignment between private food marketing standards—typically set by retailers and industry—and EU public regulations on quality and marketing. Private quality specifications should be reviewed to ensure they support sustainability goals and do not unnecessarily exceed EU requirements, which can result in avoidable food waste. For instance, retailers could ease cosmetic criteria and accept a wider range of appearances in fresh produce, rather than enforcing visual perfection that leads to the rejection of edible items.

EU-led dialogues with retailers and suppliers should focus on harmonising these standards, particularly in light of public objectives related to food waste reduction. Greater coherence between private and public frameworks would facilitate a more sustainable and inclusive food system, improving market access for suboptimal products and minimising waste across the supply chain.

3.1.3.2 Foster voluntary agreements with shared waste targets (DA)

Improve the balance of responsibilities and risks among farmers, suppliers, and buyers to reduce food waste resulting from unfair trading practices. This includes strict enforcement of the EU's Unfair Trading Practices directive to prevent actions (aligned with SDG 12.3), such as last-minute order cancellations or sudden changes in specifications that leave producers with unsellable stock. In cases where surpluses occur, mechanisms should hold the responsible party—such as a buyer who cancels an order on short notice—accountable for managing the excess, for example through redistribution, rather than allowing the food to go to waste.

Enhancing fairness and coordination across the supply chain is essential for optimising food standards. Contracts that allow some flexibility in product characteristics, such as size or shape, can prevent unnecessary rejections. Reducing over-specification imposed by dominant market players will enable a broader range of produce to reach the market, supporting a more inclusive and sustainable food system.

3.1.3.3 Strengthening supply chain fairness and cooperation (IA)

To improving responsibility distribution, it is crucial to establish mechanisms that foster collaboration among farmers, suppliers, and buyers to reduce food waste. By enforcing the EU's Unfair Trading Practices directive, stakeholders can avoid practices that result in unsellable stock, such as sudden changes in orders or specifications. Accountability for surplus management, like redistribution, should be clearly defined. Furthermore, adopting more flexible product specifications—such as size or shape variations—will allow a broader spectrum of products to meet market needs, leading to a more efficient and inclusive food system.

3.1.3.4 Maintain an EU platform for stakeholder exchange (IA)

Maintain and strengthen a Europe-wide platform—such as the EU Platform on Food Losses and Food Waste or its associated working groups—to foster ongoing dialogue, coordination, and knowledge exchange on food waste and marketing standards. Regular engagement at EU level enables public authorities, industry,

researchers, and civil society to identify emerging challenges, align responses, and assess the impact of implemented measures.

These platforms have proven effective in uniting diverse stakeholders and promoting collaborative solutions. Sustaining this dynamic will ensure continued alignment of efforts and facilitate the dissemination of successful practices—such as revised grading criteria or innovative marketing approaches—throughout the EU food supply chain.

A permanent forum for exchanging ideas and best practices among key actors—including farmers, retailers, regulators, and consumer groups—is essential for the evolution of food standards. It supports continuous collaboration and adaptation, ensuring that policies remain responsive to changing conditions and contribute meaningfully to food waste reduction.

3.1.3.5 Voluntary retail standards for in-store communication and shelf practices

Encourage retailers to include on-pack reminders or prompts that help consumers manage food (e.g., “store me in the fridge,” “freeze before...”). Promote in-store marketing standards that integrate food waste goals—such as banning misleading “Buy One Get One Free” offers and adopting signage normalising “wonky” or short-dated products. Develop a voluntary EU code of practice for food marketing and shelf strategies that support waste prevention.

3.1.4 Transparency and consumer awareness

3.1.4.1 Implement a “target–measure–act” accountability framework (IA)

At the EU level, establish binding food waste reduction targets and require standardised measurement and reporting from Member States and large food business operators. Implementing a “target–measure–act” framework ensures that all stakeholders monitor food waste—including that linked to marketing standards—and take action based on reliable data. Regular public reporting and benchmarking across the supply chain will enhance transparency, support continuous improvement, and help policymakers identify and address specific practices that contribute to food loss.

This approach, which combines setting clear targets, tracking progress, and applying corrective measures, is crucial for pinpointing where standards generate waste and where reforms are needed. By embedding accountability into policy, the EU can promote evidence-based adjustments to food marketing rules and support more sustainable outcomes.

3.1.4.2 Elevate consumer education and awareness

Consumer behaviour also plays a critical role in addressing food waste. Misunderstandings about the safety and quality of suboptimal products often lead to their rejection. Awareness campaigns that highlight their nutritional value, safety, and environmental benefits are key to changing perceptions and fostering broader acceptance of more flexible food standards. Launch EU-supported awareness campaigns and integrate food waste topics into educational programs to shift consumer perceptions of food quality and encourage

behavioural change. Consumers should be informed that “imperfect” fruits and vegetables are just as safe and nutritious, and they should be empowered to value such products. Likewise, public education should clarify the meaning of date labels (distinguishing quality-based “Best Before” dates from safety-based “Use By” dates) to prevent perfectly good food from being thrown away prematurely. Member States have begun mandating food waste education (e.g. through national laws in Italy and France); an EU-level initiative can amplify these efforts, fostering a culture in which buying non-standard produce and avoiding food waste is seen as the norm.

The potential of suboptimal food to reduce waste and increase food system resilience is enormous but underexploited. These policy recommendations offer actionable steps for transforming food standards, both public and private, to make them more flexible and conducive to waste reduction. By optimising food marketing standards, aligning stakeholder efforts, encouraging technological innovation, and fostering consumer education, the EU can create a more sustainable, resilient, and equitable food system that minimizes food waste and maximises resource efficiency.

3.2 Supporting Deliverables for policy recommendations

This table presents the full list of policy recommendation themes outlined in Section 4 of Deliverable 5.1 of the ROSETTA project. These themes are classified based on whether direct or indirect action is needed to achieve food standards optimisation. For each theme, relevant project deliverables are referenced along with brief descriptions to provide context and traceability. This helps clarify the evidence base behind each proposed policy direction.

Table 2: Supporting Deliverables for policy recommendations

Policy Theme	Referenced Deliverables	Supporting insights from deliverables
1. Public and private marketing standards		
Reform cosmetic quality standards in the food supply DA	D1.2	<ul style="list-style-type: none"> D1.2 and D1.3: analysis of the impact of aesthetic standards and private over-specification on waste. D1.4 quantifies losses due to cosmetic standards in fruits and vegetables. D3.1 pilots cosmetic flexibility solutions.
	D1.3	
	D1.4	
	D3.1	
Standardise data marking and product life in redistribution DA	D1.2	<ul style="list-style-type: none"> D1.2 identifies ambiguities in 'Best Before' and 'Use By' labels as a source of waste. D1.4 models the impact of unclear labelling. D3.1 develops clear protocols for re-labelling and freezing.
	D1.4	
	D3.1	
Integrate waste reduction into EU agri-food policies Ind A	D1.2	<ul style="list-style-type: none"> D1.2 and D1.3 emphasise the importance of incorporating waste prevention into agricultural policies, aligned with the Green Deal and Farm to Fork strategy.
	D1.3	
Encourage responsible marketing and retail practices Ind. A	D3.1	<ul style="list-style-type: none"> D3.1 explores retail marketing strategies that reduce waste, including limiting aggressive promotions and using labelling and in-store placement for suboptimal food.
2. Innovation and market diversification		

Promote secondary markets for suboptimal food marketing DA	D2.1 D1.4 D3.1	<ul style="list-style-type: none"> D2.1 collects best practices for secondary markets for suboptimal food. D1.4 quantifies the benefits in waste reduction. D3.1 evaluates logistical and legal barriers and pilots alternative market models.
Support technological innovation to reduce waste Ind A	D2.4 D3.1	<ul style="list-style-type: none"> D2.4 shows technologies such as smart packaging, mobile apps, and digital labelling to extend shelf life. D3.1 includes technologies in pilots to improve redistribution and waste reduction.
Leverage public procurement to drive waste reduction Ind A	D3.1	<ul style="list-style-type: none"> D3.1 recommends that public buyers use flexible criteria to incorporate suboptimal products, creating stable demand and legitimacy.
3. Stakeholder collaboration and alignment		
Aligning private standards with public goals DA	D1.2 D1.3	<ul style="list-style-type: none"> D1.2 and D1.3 encourage harmonising public and private standards to minimise waste caused by excessive requirements.
Foster voluntary agreements with shared waste targets DA	D1.1 D3.1	<ul style="list-style-type: none"> D1.1 details multi-actor platforms for consensus and shared responsibility. D3.1 drives voluntary agreements for common waste reduction targets.
Strengthening supply chain fairness and cooperation Ind A	D1.1 D3.1	<ul style="list-style-type: none"> D1.1 analyses power imbalances that increase waste. D3.1 suggests mechanisms to share responsibilities and improve cooperation in the chain.
Maintain an EU platform for stakeholder exchange Ind. A	D1.1 D3.1	<ul style="list-style-type: none"> D1.1 and D3.1 highlight the importance of European platforms for sharing best practices, monitoring, and continuously adapting standards.
Voluntary retail standards for in-store communication and shelf practices Ind. A	D3.1	<ul style="list-style-type: none"> D3.1 proposes voluntary codes for in-store labelling, consumer communication, and shelf practices that foster waste reduction.
4. Transparency and consumer awareness		
Implement a “target–measure–act” accountability framework Ind A	D1.4, D3.1	<ul style="list-style-type: none"> D1.4 defines indicators and methods to measure waste linked to standards. D3.1 integrates measurement systems and public reporting to drive continuous improvement.
Elevate consumer education and awareness Ind A	D1.4 D3.1	<ul style="list-style-type: none"> D1.4 shows how consumer misconceptions about suboptimal foods influence rejection. D3.1 includes educational campaigns and behavioural change strategies in pilots.

3.3 Thematic Map

In this section, we focus on the thematic map which illustrates the key policy themes aimed to structure policy recommendations for reducing food loss and waste (FLW) within the ROSETTA project. Using the **Reflexive Thematic Analysis (RTA)** approach, we interpret the data not just as a categorisation of concepts, but as a reflective process where themes are actively constructed through engagement with the evidence, context, and the goals of the policy framework.

The thematic map is organised around five central thematic domains, each represented by an oval in the visual framework. These domains group related subthemes (shown as rectangles), forming a cohesive architecture of intervention that integrates technical reform, behavioural change, market access, and collaborative governance.

3.3.1 Grouping of themes for policy recommendations

- **Food Supply Chain**

This theme addresses the operational core of the food system, from primary production to distribution. It identifies where food losses originate and what structural and regulatory barriers perpetuate them. It is crucial as it connects most directly with farmers, processors, and retailers. It also relates to reforms in standards and market practices by shaping what food is produced, accepted, and distributed.

It includes the following subthemes related to the food supply chain:

- The reform of cosmetic quality standards in primary production: stringent visual requirements that lead to the rejection of edible produce.
- The need to standardise and clarify the data marking rules to prevent unnecessary disposal due to label misinterpretation.
- Strengthen fairness and cooperation correcting power imbalances and unfair contract practices.
- Responsible retail marketing practices.

- **Align private and public standard goals**

This theme focuses on revising the rules that define what food can be sold, emphasising coherence between legal and private standards.

Key subtheme includes encouraging key actors to meet agreements with food waste targets.

- **Suboptimal product consumption**

This theme addresses how to build consumer-facing markets for foods that do not meet standard cosmetic expectations but are otherwise safe and nutritious.

Key subthemes include:

- Secondary markets: establishing online platforms or discount models to absorb imperfect produce.
- Public procurement: enabling institutional buyers to accept suboptimal products.

- **Food waste reduction**

This one includes mechanisms for monitoring, evaluating, and incentivising food waste prevention.

The key subthemes include:

- Technological innovation support to extend the shelf life of products.
- Accountability frameworks (Target–Measure–Act): institutionalising tracking and response systems.

- Policy integration: embedding FLW prevention into broader agri-food strategies and applying fiscal and regulatory tools to promote low-waste practices.

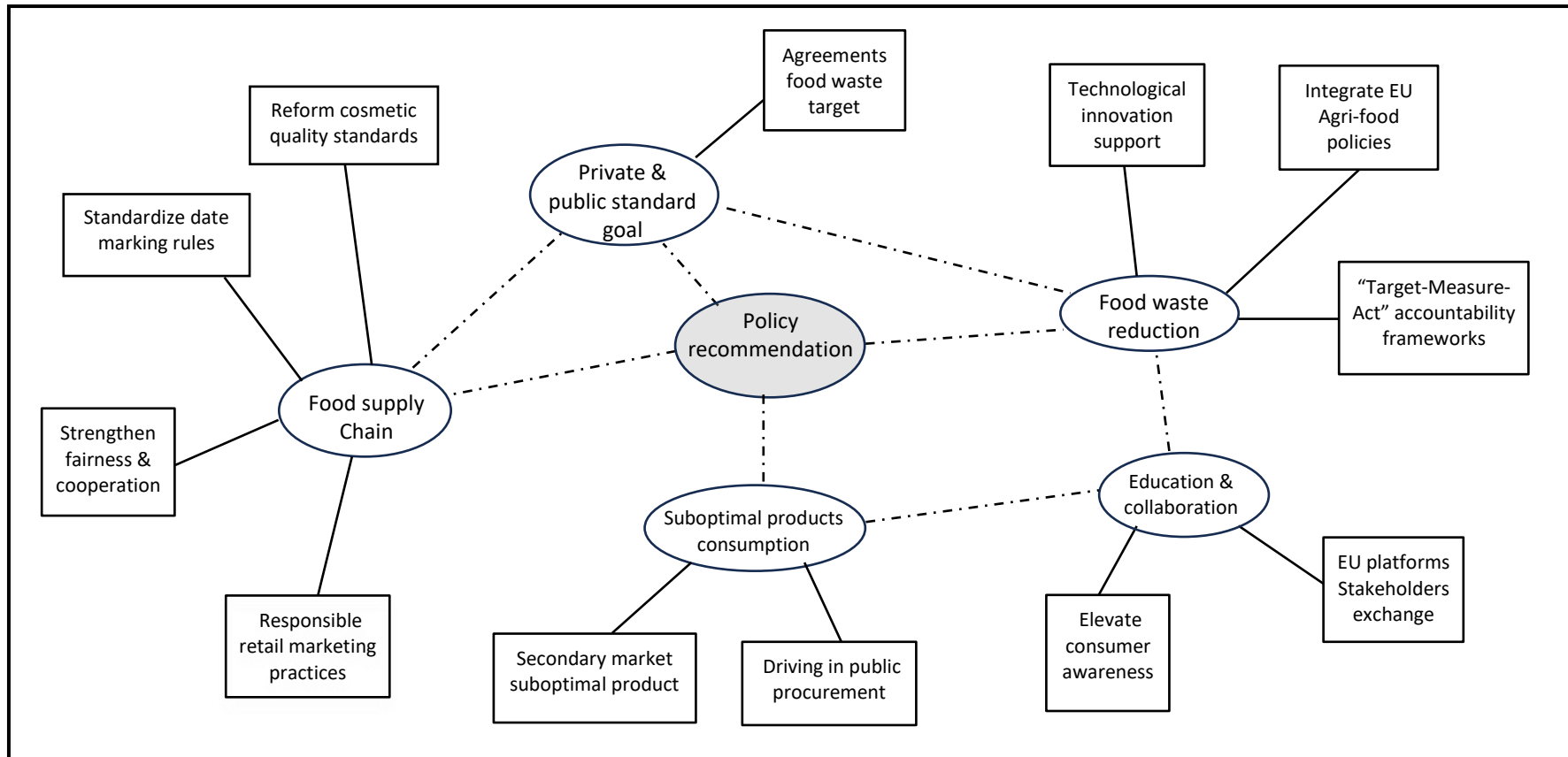
- **Education and collaboration**


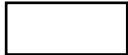


This enabling theme supports the long-term adoption and cultural acceptance of all other reforms. It promotes a shift in values and practices through education and multi-actor engagement. It connects the supply side with consumer behaviour and affects the success of redistribution and surplus recovery models.

Key subthemes include:

- Consumer education: campaigns to increase awareness and reduce stigma toward imperfect food.
- Stakeholder collaboration: platforms and roundtables for co-creation and mutual accountability.

Figure 2: Thematic map for policy recommendation to reduce food waste



-  Theme
-  Sub-theme
-  Link to Sub-theme
-  Relationship between themes

4. Brief policy recommendations

Section 4 focuses on the detailed policy recommendations derived from the previous sections of the document and the consultation processes necessary for their implementation. It is divided into three sub-sections:

- **4.1 Policy briefs with initial recommendations and consultations:** This section outlines the process for developing actionable policy recommendations based on the findings from previous deliverables. It highlights the need for further stakeholder consultations to refine and validate these recommendations, ensuring that they are grounded in practical, real-world input from various sectors.
- **4.2 Development of policy recommendations and consultation tables:** This section analyses deeply the policy recommendations. Consultation tables are prepared for the next steps along the roundtables with key stakeholders to gather opinions on policy recommendations. This feedback will be incorporated into the final recommendations, ensuring the adoption of policies that effectively reduce food waste across the European Union.
- **4.3 Policy briefs:** This section finalises the policy recommendations, including a graphic design of each group of recommendations to facilitate dissemination. These will be subsequently refined through consultation during the next steps of the round tables.

4.1 Policy briefs with initial recommendations and consultations

The following sections provide an overview of the themes for policy recommendations based on the analysis from the deliverables D1.1, D1.2, D1.3, D1.4, and D2.1. This detailed breakdown identifies both clear conclusions and those areas requiring further consultation or deeper study. These recommendations are designed to optimise food marketing standards, reduce food loss and waste (FLW), and align both public and private food systems with sustainability goals.

1. Food Supply Chain

1.1. Reform cosmetic quality standards:

- **Deliverable D1.2 and D1.3** both demonstrate that stringent cosmetic standards (such as size, shape, and uniformity) cause a significant amount of edible food to be discarded at the primary production stage. This is a major source of food waste in the supply chain.
- **Recommendation:** Relax visual requirements to allow suboptimal products (Class II produce) to enter the market. **D1.4** quantifies the waste caused by these standards and suggests that relaxing these regulations could reduce waste by up to 20% in some sectors.
- **Consultation needed:** Farmers, retailers, and industry stakeholders need to engage in discussions to establish what constitutes an acceptable level of imperfection for marketable products. This requires further dialogue to determine acceptable thresholds.

1.2. Date marking and labelling reform:

- **Deliverable D1.2** shows that ambiguous or overly conservative date labelling often leads to unnecessary disposal, even when products are still safe to consume.
- **Recommendation:** Standardise "Best Before" and "Use By" labelling across all food categories across Member States. Provide clear guidelines for product shelf-life management, particularly for redistributing surplus food.
- **Consultation needed:** Legal experts, food safety regulators, and retailers must collaborate to harmonise date labelling rules and address liability concerns for food donations and redistribution.

1.3. Strengthen fairness & cooperation in Supply Chains:

- **Deliverable D1.3** identifies power imbalances in the food supply chain that often led to the rejection of suboptimal food due to unfair contractual terms and excessive quality standards.
- **Recommendation:** Introduce regulations that mandate greater transparency in supply chain agreements, particularly in contracts between farmers and retailers. This can help ensure fairer treatment and reduce waste due to over-compliance with unnecessary standards.
- **Consultation needed:** Regulatory bodies need to consult with trade unions, producer organisations, and retailers to determine specific interventions that can balance power between supply chain actors.

2. Private and public standard goal

2.1. Aligning public and private standards:

- **Deliverable D1.3** shows that private standards often go beyond public regulations, leading to excessive rejection of suboptimal products and increased waste. These stricter standards should align with public sustainability and waste-reduction goals.
- **Recommendation:** Promote alignment between private sector standards (particularly those from retailers) and public goals such as sustainability and food waste reduction. This could include incentives for businesses to adopt standards that reduce waste.
- **Consultation needed:** Ongoing consultations between public authorities (EU and national) and private sector representatives (retailers, certifiers) are needed to develop common, transparent standards that align with sustainability goals.

2.2. Encourage voluntary agreements on waste reduction:

- **Deliverable D1.1** outlines the importance of industry-wide voluntary agreements to address food waste. These agreements can help actors align around common targets and share best practices for reducing waste.
- **Recommendation:** Facilitate the development of voluntary agreements among key stakeholders in the food sector. These should include clear, measurable targets for food waste reduction.
- **Consultation needed:** Industry leaders, policymakers, and civil society groups must continue to negotiate frameworks for these voluntary agreements.

3. Suboptimal product consumption

3.1. Promote secondary markets for suboptimal products:

- **Deliverable D2.1** shows that dedicated secondary markets for suboptimal products (e.g., imperfect fruits, vegetables, or bakery items) can significantly reduce waste by providing consumers with affordable options.
- **Recommendation:** Encourage the establishment of secondary market platforms, such as online stores, supermarkets with dedicated sections, or community-based food hubs that sell suboptimal products at discounted prices.
- **Consultation needed:** Retailers, tech providers (for platform development), and consumers need to be consulted on their willingness to engage with secondary markets and how such systems would be received in the marketplace.

3.2. Integrate suboptimal foods into public procurement:

- **Deliverable D3.1** highlights successful examples of public institutions (schools, hospitals, and care homes) integrating imperfect food into their procurement processes.

- **Recommendation:** Develop guidelines for public procurement that allow the purchase of suboptimal foods, contributing to both waste reduction and cost savings.
- **Consultation needed:** Public procurement bodies, institutional buyers, and food safety experts need to discuss how to guarantee the safety and quality of suboptimal products in public meals.

4. Food waste reduction

4.1. Support technological innovation:

- **Deliverable D2.4** demonstrates the role of innovation in reducing food waste, particularly in packaging, shelf-life extension technologies, and dynamic pricing for food products.
- **Recommendation:** Provide funding and incentives for Research and Development (R&D) in technologies that can extend the shelf life of suboptimal food or improve its appeal to consumers.
- **Consultation needed:** Technology developers, R&D funding bodies, and industry stakeholders need to identify the most promising technologies and investment opportunities.

4.2. Implement Target–Measure–Act accountability frameworks:

- **Deliverable D1.4** suggests the adoption of measurable targets to track food waste reduction. This could help ensure that food waste reduction efforts are transparent, consistent, and measurable across sectors.
- **Recommendation:** Establish clear accountability frameworks for businesses, public institutions, and consumers to track food waste progress, report results, and take corrective actions.
- **Consultation needed:** Stakeholders involved in data collection, such as tech companies, supply chain managers, and policymakers, need to collaborate on defining the indicators and data systems required for these frameworks.

5. Education and collaboration

5.1. Consumer education and awareness:

- **Deliverable D2.1** emphasises the importance of consumer education in reducing food waste. Educating consumers about the value of imperfect food can reduce stigma and encourage more sustainable consumption habits.
- **Recommendation:** Launch large-scale EU-wide public campaigns aimed at educating consumers about food waste, including the value of suboptimal foods and sustainability.
- **Consultation Needed:** NGOs, educational institutions, and media experts must be involved to ensure campaigns are culturally sensitive and reach diverse audiences.

5.2. Facilitate stakeholder collaboration:

- **Deliverable D1.1** highlights the importance of platforms for multi-actor collaboration to discuss, share, and implement food waste reduction practices.
- **Recommendation:** Set up EU-wide platforms for stakeholders to exchange best practices, collaborate on joint initiatives, and develop shared tools for food waste reduction.
- **Consultation needed:** A broad range of stakeholders, including industry, civil society, and governmental bodies, must be consulted to develop the operational framework for these platforms.

4.2 Development of policy recommendations and consultations tables

This section develops policy recommendations on each of the selected themes and also provides a consultation table on each subtheme with possible questions of each one for relevant stakeholders. The aim

of these consultations will be to ensure that policy recommendations are not only based on empirical data but also reflect the practical realities and diverse interests of all parties involved in the food system. These consultations will serve as a basis for discussion to develop a co-creation process that will be carried out in roundtables in the coming months. These will be participatory forums designed to enable policymakers to interact with various actors involved in the food supply chain and other relevant sectors. These roundtables are pending organisation by Eucofel. They are planned to be held at the EU or national level, in person or online, depending on the scope and relevance of the policy under discussion. The main objective is to involve a wide range of stakeholders, which may include:

- Policy makers and regulators (EU and national authorities)
- Industry representatives (e.g., producers, retailers, certification bodies)
- Experts from academia and research institutions
- Civil society organisations (e.g., consumer advocacy groups, NGOs)
- Other relevant stakeholders in the food value chain (e.g., logistics, technology providers)

4.2.1 Food Supply Chain

4.2.1.1 Reform cosmetic quality standards

A large share of food waste at the primary production stage is linked to the rejection of fruits and vegetables that do not meet specific visual requirements, such as uniformity in shape, size, colour, or skin appearance. These criteria are often unrelated to food safety or nutritional value and reflect both public marketing standards and, more importantly, the stricter private specifications imposed by retailers. These private standards, which frequently surpass EU regulatory requirements, are inconsistent across buyers and remain largely unregulated and opaque.

This situation not only leads to avoidable food losses but also creates inefficiencies in the supply chain and economic losses for producers. Addressing this issue through regulatory reform and coordinated stakeholder dialogue is crucial for reducing upstream food waste and increasing the valorisation of edible products that fall outside current cosmetic norms.

Policy recommendation:

The European Commission, in cooperation with Member States and key supply chain actors, should revise the regulatory and commercial framework that governs the visual quality of agricultural produce. Specifically, we recommend:

- Updating EU Regulation to broaden the tolerance for visual deviations in fresh produce categories still covered by specific marketing standards, particularly under Class II specifications.
- Promoting the development of EU-level guidelines defining acceptable cosmetic variation for fruits and vegetables that do not compromise edibility or quality.
- Encouraging Member States to monitor and report the effects of private standards on food losses at the farm level.
- Facilitating voluntary industry dialogues aimed at establishing more flexible and transparent private specifications that align with public sustainability goals.

Consultation needed:**Table 3: Consultation on Cosmetic quality standards**

Stakeholder	Purpose of consultation	Key questions
Primary producers and cooperatives	Assess which cosmetic criteria are most frequently leading to product rejection at the production stage.	Which physical defects (size, colour, shape) most commonly lead to product discard? What level of flexibility is feasible without reducing marketability?
Post-harvest operators and sorting facilities	Understand operational challenges in adjusting sorting and grading processes to include greater variability.	What technical or economic barriers exist in grading and packaging products with wider aesthetic variation?
Retailers and buyers	Evaluate the rationale behind current private standards and the willingness to introduce more flexibility.	Are current specifications based on actual consumer demand? Would more flexible standards be acceptable under certain conditions?
National and EU regulatory authorities	Explore the legal scope for updating existing marketing standards and coordinating with national rules.	How can EU regulation be adapted while preserving consumer protection and market consistency?
Standardisation and certification companies	Discuss how to reflect updated aesthetic tolerances in product specifications and audits.	Can quality schemes be adjusted to accommodate greater cosmetic variability without affecting certification credibility?

4.2.1.2 Date marking and labelling reform

Inaccurate, ambiguous, or overly conservative use of date marking on food packaging is a recognised driver of unnecessary food disposal, particularly in the later stages of the supply chain. In many cases, food products are discarded even though they are still organoleptically acceptable and microbiologically safe. This is largely due to the lack of clarity in distinguishing between “Use By” (a safety limit) and “Best Before” (a quality indicator), both by consumers and, at times, by food operators themselves.

Although Regulation (EU) 1169/2011 on the provision of food information to consumers (FIC Regulation) establishes fundamental requirements, including the mandatory use of date marking, the regulation leaves room for interpretation. Member States and food business operators apply varying criteria when determining shelf-life dates, and these inconsistencies contribute to early withdrawal of safe food from the market. Additionally, conservative industry practices—often based on precautionary principles or brand protection—tend to shorten declared shelf life beyond what is technically necessary.

These divergences result in a system where products with identical characteristics may have different labelled expiry dates depending on the brand, operator or country, leading to confusion, distrust and ultimately, food waste. Addressing this at the EU level would reduce waste while maintaining legal clarity and consumer safety.

Policy recommendation:

The European Commission should strengthen the consistency and clarity of food date marking practices across the EU by updating the interpretation and implementation of EU Regulation, specifically:

- Provide harmonised technical guidance on the appropriate use of “Best Before” versus “Use By” dates, especially for borderline categories such as dairy, baked goods, and pasteurised foods.
- Promote standardised formats, positions and visual styles for date marking on food labels, to improve readability and reduce misinterpretation.
- Encourage the use of science-based, product-specific shelf-life determination methods rather than risk-averse defaults.
- Support the alignment of national control practices to ensure coherent interpretation and enforcement across Member States.

These actions would improve the reliability of date marking for consumers and reduce the premature disposal of safe and edible food.

Consultation needed:

Table 4: Consultation on Date marking and labelling reform

Stakeholder	Purpose of consultation	Key questions
Food safety authorities (EFSA, AESAN, etc.)	Define evidence-based criteria for setting expiry dates on different product types.	What microbiological or quality thresholds justify a “Use By” instead of a “Best Before” label?
Food producers and retailers	Review current shelf-life setting practices and the basis for conservative expiry labelling.	What internal protocols are used to define shelf life? Are these based on actual product stability?
National food control authorities	Ensure coordinated interpretation and enforcement of EU Regulation.	How do national agencies enforce date marking requirements? Are guidelines consistently applied?
Standardisation and labelling experts	Improve the communication function of date marking.	What formats (e.g. font size, layout, icons) reduce misreading or confusion by consumers?

4.2.1.3 Strengthen fairness and cooperation in supply chain

Unequal power relations between actors in the agri-food supply chain—particularly between primary producers and large-scale buyers—are a structural driver of food waste. Smaller producers often face contractual obligations that impose stringent quality requirements, delivery volumes, or penalties that leave little room for flexibility. As a result, edible but suboptimal products are frequently discarded at the production or post-harvest stage, either because they fail to meet excessive specifications or because they are rejected with insufficient notice.

These imbalances are reinforced by the lack of transparency in supply chain contracts, the limited negotiating power of producers, and the absence of harmonised rules regulating private quality standards. The ROSETTA analysis highlights that many producers are reluctant to report these practices due to dependency on the buyer or fear of contract loss, further entrenching the status quo.

At the EU level, EU Directive on Unfair Trading Practices (UTPs) provides a legal foundation to prevent some of the most harmful contractual practices, such as last-minute cancellations or unilateral changes. However, the Directive does not yet address the systematic rejection of products based on cosmetic or private standards, nor does it mandate contract transparency or shared responsibility for food waste.

The REFRESH project also underscores the need to improve upstream collaboration, encouraging buyers to commit to clearer purchasing agreements, long-term contracts, and shared forecasting to reduce overproduction and subsequent waste.

Policy recommendation:

To improve fairness and cooperation across the agri-food supply chain, the European Commission should:

- Expand the scope of the UTP Directive to cover excessive and unjustified private specifications that lead to waste, particularly when not grounded in safety or legal compliance.
- Promote greater contractual transparency by requiring written agreements that specify quality standards, volumes, rejection criteria, and liability for waste.
- Encourage voluntary codes of conduct and pre-competitive initiatives that support joint forecasting, longer contract durations, and shared risk mechanisms.
- Facilitate the inclusion of food waste prevention clauses in vertical agreements between suppliers and retailers.

These measures would reduce the pressure on producers to over-conform to opaque or excessive standards, improving market efficiency and reducing systemic waste.

- **Consultation needed:**

Table 5: Consultation on Strengthen fairness and cooperation in Supply Chains

Stakeholder	Purpose of consultation	Key questions
Producer organisations and cooperatives	Identify types of contract clauses that lead to unnecessary product rejection.	What types of private specifications or contractual terms result in higher product discard?
Retailers and buying groups	Understand internal procurement practices and explore collaborative approaches.	Are current agreements transparent and balanced? Would joint forecasting or shared criteria reduce waste?
National enforcement authorities	Assess the implementation of the UTP Directive and potential areas for extension.	Are unfair practices being reported and addressed? Are cosmetic rejections being considered under UTP enforcement?
EU policymakers and legal experts	Explore legal feasibility and enforcement mechanisms for contract transparency.	What additional regulatory instruments or guidance would support fairer supply chain relations?
Trade unions and civil society	Ensure that reforms reflect social equity and producer protection.	What mechanisms can protect vulnerable suppliers from coercive contract terms?

4.2.2 Private and public standard goal

4.2.2.1 Aligning public and private standards

In the European food system, private quality standards—particularly those set by large retailers and third-party certifiers—often impose requirements that go significantly beyond public regulatory standards. These can include aesthetic criteria, packaging protocols, or pesticide residue limits that are stricter than those established in EU law. While such private standards are intended to ensure quality, traceability or brand differentiation, they also contribute to the rejection of edible products that do not conform to these elevated expectations, even when they meet legal safety and marketing requirements.

The ROSETTA analysis identifies this divergence as a structural factor in food loss, particularly in the case of fresh produce, where uniformity and cosmetic appearance are commonly over-specified. Unlike public standards, which are developed through transparent and democratic processes, private standards are not subject to public oversight and often reflect market-driven rather than sustainability objectives.

The lack of alignment between public regulations and private quality standards contributes to inefficiencies and hampers efforts to reduce food waste. To address this, it is essential to develop guidelines on food waste policy integration to promote mechanisms for co-regulation and establish dialogue platforms that bring together public authorities and private stakeholders. Such coordination can help reconcile regulatory requirements with commercial practices, ensuring that sustainability objectives are consistently reflected across all levels of the food supply chain.

- **Policy recommendation:**

The European Commission should promote regulatory and voluntary mechanisms to ensure that private food standards are consistent with EU sustainability goals. Specifically:

- Facilitate the development of EU-endorsed principles or benchmarks for private standards, ensuring they do not contradict food waste prevention and circular economy objectives.
- Establish multi-stakeholder platforms to regularly review and assess the environmental and social impacts of private quality standards, with a focus on food loss.
- Encourage co-regulation schemes or voluntary codes of practice that align retailer and certifier requirements with public objectives, particularly in relation to suboptimal products.
- Include adherence to sustainability-aligned standards as a criterion in access to EU funding instruments, innovation support, or green public procurement.

By ensuring that private and public standards are aligned, the EU can foster a more coherent and fair food system where quality assurance does not come at the cost of unnecessary waste.

Consultation needed:

Table 6: Consultation on Aligning public and private standards

Stakeholder	Purpose of Consultation	Key Questions
Retailers and retail associations	Clarify internal motivations behind stricter-than-legal standards and willingness to adopt sustainability criteria	What flexibility exists to revise private standards without affecting brand integrity or consumer trust?
Certification companies (e.g., Global G.A.P., IFS)	Explore integration of waste prevention and sustainability into auditing frameworks	Can sustainability indicators be embedded in quality certifications? How would this affect producer compliance?
EU and national regulatory authorities	Define mechanisms to monitor, benchmark, or guide private standards	What tools could the EU use to promote convergence without overregulating the private sector?
Producer and processor organisations	Assess the operational impact and cost of complying with private vs. public standards	What burdens arise from divergent standards? Would more alignment reduce rejections and increase supply chain efficiency?
Sustainability and consumer advocacy groups	Ensure alignment with broader environmental and food security objectives	Do current private standards reinforce or hinder progress on sustainability and food access?

4.2.3 Suboptimal product consumption

4.2.3.1 Encourage voluntary agreements on waste reduction

Voluntary agreements are a proven instrument for engaging diverse food system stakeholders in coordinated efforts to reduce food waste, particularly when regulatory approaches are limited or politically sensitive. These agreements, when well-designed, allow actors across the value chain to define shared objectives, track progress collectively, and exchange best practices in a pre-competitive environment. They also promote mutual accountability while preserving the flexibility needed to address sector-specific constraints.

The ROSETTA project recognises the importance of voluntary agreements, especially in systems where responsibility for waste is fragmented among producers, processors, distributors, and retailers. Such agreements can serve as platforms for dialogue, innovation, and gradual alignment with public sustainability goals.

Voluntary frameworks can lead to significant reductions in food waste when built on clear targets, transparent monitoring, and effective collaboration between public and private actors. Experience has shown that structured agreements—supported by measurable outcomes and flexible governance—can create the conditions necessary for sustained progress across the food system.

- **Policy recommendation:**

The European Commission and Member States should actively support the creation and expansion of national and sectoral voluntary agreements to reduce food waste. To ensure impact and scalability, we recommend:

- Encouraging Member States to establish voluntary agreements at national level with food sector stakeholders, underpinned by shared definitions, baseline measurements, and science-based reduction targets.

- Supporting the development of EU-level guidance for the design, implementation, and monitoring of voluntary agreements, including indicators, governance mechanisms, and reporting standards.
- Promoting cross-border knowledge exchange among existing national agreements (e.g. Danish, Dutch) to identify success factors and transferable practices.
- Ensuring transparency and accountability through regular public disclosure of progress and independent evaluation mechanisms.

Voluntary agreements should complement regulatory action and form part of a multi-level governance strategy to meet the EU’s commitment to halve food waste by 2030.

- **Consultation needed:**

Table 7: Consultation on Voluntary agreements on waste reduction

Stakeholder	Purpose of consultation	Key questions
Industry associations and large retailers	Identify willingness and capacity to enter into or scale up voluntary food waste commitments	What incentives or conditions would support industry participation in long-term voluntary agreements?
National governments and policy units	Define the institutional framework to facilitate, monitor, and support voluntary agreements	How can governments provide a neutral platform and ensure independent measurement of progress?
Food processors and producers	Assess operational impacts and support required to meet voluntary targets	What kind of data sharing, technical assistance, or financial support would facilitate participation?
Civil society and sustainability NGOs	Ensure social legitimacy, independent oversight, and integration of equity and transparency principles	How can agreements be made inclusive, transparent, and aligned with public interest goals?
Academia and data platforms	Provide methodologies for monitoring, data collection, and impact assessment	What indicators and data models are best suited for tracking progress in diverse food supply chains?

4.2.3.2 Promote secondary markets for suboptimal products

A substantial proportion of food waste at the retail and consumer level is driven by the exclusion of visually imperfect or non-standard products from mainstream market channels. These “suboptimal” products—such as misshapen vegetables, blemished fruits, or broken baked goods—often meet all safety and nutritional criteria but are rejected due to aesthetic or sizing norms. The ROSETTA project highlights that these items represent a valuable opportunity for waste reduction if appropriate secondary markets can be developed.

Secondary markets serve as a bridge between supply and demand for such products, offering affordable food options while reducing pressure on producers to discard edible items. These can take the form of online platforms, dedicated sections in supermarkets, or community-level food hubs. Their success, however, depends on overcoming logistical, consumer perception, and technological barriers.

Initiatives like Too Good To Go, Oddbox, and NoFoodWasted demonstrate that consumers are increasingly open to purchasing non-standard products if they are framed as sustainable, affordable, and of equal quality. Supporting such approaches through public-private collaboration and targeted awareness campaigns can help normalise the consumption of suboptimal foods and contribute to waste reduction.

- **Policy recommendation:**

The European Commission and Member States should support the creation and expansion of structured secondary market channels for suboptimal products, helping to normalise their sale and consumption. In particular:

- Provide guidance to Member States and retailers on how to integrate dedicated suboptimal product streams into conventional retail environments (e.g. discount aisles, weekly boxes);
- Promote investment in digital platforms and apps that connect consumers directly with suboptimal produce at lower prices.
- Support local and regional food hubs or cooperatives that specialise in selling cosmetically imperfect products through community-based models.
- Encourage the inclusion of suboptimal product streams in green public procurement policies as a downstream signal of legitimacy and stability.

By strengthening these alternative channels, the EU can improve food system efficiency and foster consumer acceptance of natural product diversity.

- **Consultation needed:**

Table 8: Consultation on Promote secondary markets for suboptimal products

Stakeholder	Purpose of consultation	Key questions
Retailers and retail chains	Understand commercial feasibility, infrastructure needs, and consumer reception in store settings	What models have been tested? What barriers (branding, logistics) must be overcome to dedicate space to suboptimal items?
Technology developers / platforms	Explore possibilities for digital matchmaking and predictive tools	What types of apps, AI tools, or logistics innovations can make suboptimal product distribution scalable?
Consumer behaviour experts	Analyse market receptivity and design of effective messaging and incentives	How do consumers perceive suboptimal products? What pricing, messaging, or trust mechanisms influence uptake?
Producer and packaging organisations	Evaluate technical requirements and costs for sorting, handling and marketing of suboptimal produce	What adjustments to current processes would be needed to integrate a suboptimal product stream?
Local authorities and social enterprises	Support local food resilience and equitable access through community-based secondary markets	How can municipalities or NGOs contribute to the setup and governance of community-led secondary food hubs?

4.2.3.3 Integrate suboptimal foods into public procurement

Public procurement has the potential to play a transformative role in promoting food system sustainability. One underused mechanism is the inclusion of suboptimal foods—products that deviate from standard cosmetic or sizing specifications but are entirely safe and nutritious—into institutional catering contracts.

Schools, hospitals, care homes, and public canteens represent significant demand volumes and can lead by example in reducing waste and reshaping perceptions of product quality.

The ROSETTA project highlights examples where public institutions have successfully introduced imperfect produce in their meal services, demonstrating that these products can be accepted when properly handled and when procurement criteria allow for it. However, this remains the exception rather than the norm. Current public procurement frameworks often rely on rigid specifications that prioritise standardisation and visual uniformity, implicitly excluding suboptimal items even when they meet all safety and nutritional requirements.

European policy frameworks such as the EU Green Public Procurement (GPP) criteria, as well as the Farm to Fork Strategy, support the idea of leveraging public purchasing power to foster sustainable practices, including food waste prevention. Additionally, other European project (REFRESH and BIOVOICES) identifies public procurement as a key enabler of innovation and systemic change, particularly when new criteria are co-developed with suppliers and food service operators.

- **Policy recommendation:**

The European Commission and Member States should promote the integration of suboptimal food products into public procurement schemes, as part of their broader sustainability and circular economy goals. Specifically:

- Update EU Green Public Procurement (GPP) guidelines to explicitly allow for the inclusion of cosmetically imperfect products that comply with food safety and quality requirements.
- Encourage Member States and local authorities to revise national procurement standards and model contracts to remove barriers against the use of non-standard food.
- Provide technical guidance to institutional buyers on how to manage the storage, preparation, and presentation of suboptimal food in a way that preserves quality and safety.
- Support pilot programmes and knowledge exchange among institutions that have successfully integrated suboptimal products into their catering services.

Through these measures, the public sector can lead by example in supporting market access for suboptimal foods and helping normalise their acceptance.

- **Consultation needed:**

Table 9: Consultation on Integrate suboptimal foods into public procurement

Stakeholder	Purpose of consultation	Key questions
Public procurement agencies (EU, national, local)	Assess current barriers and opportunities for adjusting procurement criteria	Are current technical specifications too restrictive to allow suboptimal produce? What flexibility exists within current legal frameworks?
Institutional catering providers	Identify operational constraints and training needs related to suboptimal food integration	How can food service staff adapt preparation processes to accommodate cosmetic irregularities?
Food safety authorities	Ensure that integration of suboptimal foods complies with hygiene and traceability rules	What documentation and controls are required to ensure that suboptimal products meet the same safety standards?
Suppliers and cooperatives	Assess their ability and willingness to supply suboptimal food products on a consistent basis	Can producers and distributors reliably provide suboptimal items at institutional scale, with appropriate sorting and labelling?
Local governments and pilot project coordinators	Share experiences and scale successful procurement models involving suboptimal foods	What lessons can be drawn from municipalities or institutions that have already implemented this approach?

4.2.4 Food waste reduction

4.2.4.1 Support technological innovation

Technological innovation plays a crucial role in reducing food waste across the supply chain, particularly by addressing challenges related to product perishability, inventory management, and consumer purchasing patterns. The ROSETTA project highlights innovations such as shelf-life extension technologies, intelligent packaging, dynamic pricing systems, and predictive analytics as promising tools to prevent losses, especially for perishable or suboptimal products.

Many of these solutions remain underutilised due to a lack of targeted investment, insufficient knowledge transfer, and fragmented R&D funding mechanisms. Moreover, small and medium-sized enterprises (SMEs) in the food sector often lack access to the capital or technical partnerships needed to adopt or develop such innovations.

Other EU projects like REFRESH and FUSIONS also emphasise that technology alone is not sufficient; successful implementation depends on collaboration across sectors, from tech developers and retailers to logistics providers and data managers. The EU's Green Deal, Farm to Fork Strategy, and Horizon Europe provide relevant frameworks for supporting innovation that contributes to both economic and environmental goals, including food waste prevention.

- **Policy recommendation:**

The European Commission and national governments should strengthen support for R&D and deployment of technologies that directly contribute to food waste reduction. Specifically:

- Prioritise food waste prevention technologies in Horizon Europe and national R&I programmes, particularly those targeting shelf-life extension, real-time monitoring, and efficient redistribution.
- Support cross-sector innovation hubs or Living Labs that bring together agri-food actors and technology providers to co-develop and pilot solutions.
- Facilitate SME access to innovation through dedicated funding streams, technical support, and matchmaking with tech developers.
- Encourage the adoption of digital tools (e.g. AI, IoT, blockchain) for improved traceability, stock forecasting, and real-time supply chain adjustments.

By investing in innovation and its practical uptake, public policy can unlock systemic efficiencies that contribute to the EU’s commitment to halving food waste by 2030.

- **Consultation needed:**

Table 10: Consultation on Technological innovation to food waste reduction

Stakeholder	Purpose of Consultation	Key Questions
Technology developers and start-ups	Identify promising innovations and understand scaling barriers	What technologies have shown the greatest potential for reducing food waste? What support is needed to scale them?
Food industry (retailers, processors, logistics)	Understand real-world application and integration needs	What types of innovation are most relevant to operational challenges in managing perishables or suboptimal products?
R&D funding agencies and public innovation bodies	Define priority areas and ensure targeted funding allocation	Are current funding mechanisms aligned with food waste prevention objectives? How can access be improved for SMEs?
Data science and digital solution providers	Explore opportunities for AI, IoT, and data-driven tools in forecasting and shelf-life optimisation	What data infrastructures or interoperability standards are needed to enable predictive management of waste?
Academic research institutions	Contribute evidence on the environmental and economic impact of specific technologies	What methodologies should be used to assess the life-cycle benefits of food waste prevention technologies?

4.2.4.2 Implement Target–Measure–Act accountability frameworks

Achieving a meaningful reduction in food waste across the EU requires more than isolated interventions—it demands a systemic shift toward accountability. The ROSETTA project highlights that without clear targets, harmonised measurement protocols, and structured reporting mechanisms, food waste efforts remain fragmented and difficult to evaluate. A coherent accountability framework is essential to track progress, compare outcomes across sectors, and identify where corrective actions are needed.

Despite the EU’s political commitment to halve food waste by 2030, most Member States and supply chain actors lack formal mechanisms to measure losses consistently. Other EU project such as REFRESH and FUSIONS underline the need for coordinated data-driven monitoring approaches that allow for benchmarking and strategic planning at all levels—from national governments to retailers and food service providers.

While Eurostat and FAO methodologies exist for food waste quantification, their uptake remains limited. The development of Target–Measure–Act (TMA) frameworks would help operationalise the EU’s objectives by embedding food waste tracking into organisational routines, public policies, and supply chain management systems.

- **Policy recommendation:**

The European Commission, in coordination with Member States and relevant actors, should promote the adoption of TMA frameworks to embed food waste accountability across sectors. Specifically:

- Set binding or recommended food waste reduction targets at Member State and sectoral levels, aligned with SDG 12.3 and EU Farm to Fork objectives.
- Support the use of harmonised methodologies (e.g. EU Food Loss and Waste Measurement Methodology) for accurate and comparable data collection.
- Develop digital infrastructure to facilitate reporting, data sharing, and monitoring by public and private actors.
- Encourage businesses to integrate food waste KPIs into ESG (Environmental, Social, Governance) frameworks and sustainability disclosures.
- Establish national focal points or observatories to coordinate progress tracking and corrective policy action.

These measures will move food waste prevention from aspiration to evidence-based governance.

- **Consultation needed:**

Table 11: Consultation on Implement target–Measure–Act accountability frameworks

Stakeholder	Purpose of consultation	Key questions
Statistical agencies and data platforms	Ensure that measurement methodologies are scientifically robust and compatible across Member States	What data sources, levels of granularity, and units of measurement are most appropriate for food waste tracking?
Supply chain actors (retailers, processors, food service)	Evaluate feasibility and costs of implementing internal food waste KPIs	What tools or systems are already in use? What incentives or requirements would support broader implementation?
Tech and digital solution providers	Support development of monitoring platforms, dashboards, and automated reporting tools	What kind of digital infrastructure is needed for scalable, real-time waste tracking across sectors?
National ministries and regulatory bodies	Define mechanisms for aggregating, validating, and publishing national-level data	How can data collection be institutionalised without overburdening businesses or undermining comparability?
Academic institutions and research centres	Provide methodological validation and support capacity building	What indicators best capture both food loss and preventable waste across different segments of the chain?

4.2.5 Education & collaboration

4.2.5.1 Consumer education and awareness

Changing consumer behaviour is one of the most effective yet complex levers for reducing food waste. The ROSETTA project recognises that many household food waste decisions are driven by misconceptions about quality, safety, and shelf life—especially in relation to suboptimal or imperfect products. Consumers often equate cosmetic appearance with edibility, leading to unnecessary disposal of nutritious food.

Educational interventions are essential to change perceptions around food waste. However, general information alone is often not enough. Research indicates that emotional appeals, normative messaging, and visible role modelling tend to be more effective than purely rational instructions. For campaigns to have real impact, they must be culturally appropriate, tailored to specific contexts, and developed in collaboration with the communities they aim to engage.

In line with the Farm to Fork Strategy and UN SDG 12.3, raising awareness is not just a communication task—it is a policy priority. Embedding food waste prevention into school curricula, media programming, and public discourse is critical to catalysing lasting change.

- **Policy recommendation:**

The European Commission and Member States should scale up coordinated educational campaigns focused on food waste prevention, supported by behavioural science and public engagement. Specifically:

- Design and fund EU-wide campaigns that demystify “suboptimal” products and normalise sustainable consumption habits.
- Integrate food waste education into national curricula at primary and secondary levels, linking it with environmental literacy and nutrition.
- Promote partnerships with media outlets, influencers, and supermarkets to disseminate consistent and motivating messages.
- Develop citizen science and participatory projects that encourage households to track and reduce their own food waste.
- Support social innovation and peer-to-peer learning initiatives, particularly in vulnerable or food-insecure communities.

By improving public understanding and reshaping cultural norms around food value and waste, these measures can foster durable behavioural change across generations.

- **Consultation needed:**

Table 12: Consultation on Consumer education and awareness

Stakeholder	Purpose of consultation	Key questions
NGOs and civil society organisations	Co-design inclusive, community-based education strategies	What messages and formats are most effective for different audiences and cultural contexts?
Educational institutions and ministries	Embed food waste prevention in formal education and teacher training programmes	How can food waste topics be integrated into existing curricula without requiring major system reforms?
Media experts and campaign designers	Ensure communication is engaging, evidence-based, and tailored to behavioural triggers	What narratives and visual strategies most effectively reduce waste at the household level?
Behavioural science researchers	Validate campaign approaches and evaluate outcomes using controlled methodologies	What indicators should be used to measure changes in awareness, attitudes, and self-reported behaviour?
Retailers and food service providers	Amplify campaign reach through point-of-sale materials and loyalty programmes	How can private actors contribute to consistent messaging and consumer education across the food environment?

4.2.5.2 Facilitate stakeholder collaboration

Food waste is a cross-cutting challenge that involves actors from every stage of the food system—producers, processors, retailers, consumers, public authorities, and civil society. The ROSETTA project stresses that isolated actions are insufficient: what’s needed is a systemic approach, driven by multi-actor collaboration. However, meaningful collaboration remains underdeveloped due to siloed governance, lack of neutral coordination platforms, and insufficient mechanisms to exchange best practices.

EU projects such as REFRESH, BIOVOICES, and CARINA have all demonstrated that structured collaboration platforms—whether national or European—are critical to building trust, facilitating dialogue, aligning goals, and jointly developing tools and indicators. These platforms should go beyond information exchange to enable co-creation of solutions, monitoring progress, and launching joint pilot actions.

The EU Platform on Food Losses and Food Waste is a valuable example at policy level, but its lessons and structure must be adapted and extended to operational collaboration at regional, sectoral, and thematic levels to ensure broad stakeholder engagement and impact on the ground.

- **Policy recommendation:**

The European Commission should support the establishment and long-term operation of structured, multi-actor platforms to promote cross-sector collaboration on food waste prevention. Specifically:

- Promote the creation of EU and national platforms that enable coordination among producers, retailers, public bodies, researchers, and NGOs.
- Provide technical and financial support for platforms that focus on joint problem-solving, data sharing, and project incubation.

- Develop tools and digital infrastructure for collaborative monitoring, benchmarking, and best practice dissemination.
- Encourage participatory governance in these platforms to ensure inclusivity, transparency, and mutual accountability.
- Link platform outputs to EU policy cycles (e.g. Farm to Fork progress reports, CAP strategic plans) to ensure integration into broader strategies.

Well-designed collaboration frameworks can accelerate systemic change by mobilising the collective intelligence, capacity, and responsibility of all actors in the food system.

- **Consultation needed:**

Table 13: Consultation on Facilitate stakeholder collaboration

Stakeholder	Purpose of consultation	Key questions
National ministers and EU institutions	Define governance models and funding mechanisms for long-term collaboration platforms	What legal or financial structures are needed to institutionalise stakeholder platforms at national or EU level?
Producer associations, retailers, and logistics actors	Clarify priorities and joint challenges to be addressed through collaborative mechanisms	What supply chain issues could be more effectively addressed through collective solutions than individual action?
NGOs and consumer advocacy groups	Ensure inclusivity and legitimacy of platforms, and address food justice concerns	How can platforms balance power asymmetries and represent marginalised voices in food waste governance?
Academic and research centres	Provide scientific support, facilitate neutral convening, and contribute to knowledge transfer	What research gaps or pilot methodologies should be prioritised for multi-actor testing and uptake?
Digital tool developers and data specialists	Build shared infrastructures for collaboration, communication, and progress tracking	What IT systems or data standards are needed to support distributed, real-time collaboration across sectors?

4.3 Policy Brief

4.3.1 Improving the Food Supply Chain to reduce food waste

These recommendations have the objective to identify actionable policy that reduce food waste within the food supply chain by targeting key upstream drivers: aesthetic standards, inconsistent date labelling, and unfair trading practices.

Implementing these policy actions will:

- Reduce avoidable losses at the farm and post-harvest level.
- Improve consumer confidence and decision-making.
- Create a more transparent, equitable, and resource-efficient food system.

Policy recommendation:**1. Reform cosmetic quality standards**

Revise the regulatory and commercial framework governing the visual quality of agricultural produce by:

- Revise regulation to allow greater tolerance for visual deviations in fresh produce, especially within Class II categories.
- Develop EU-level guidelines defining acceptable cosmetic variation without compromising food safety or nutritional value.
- Encouraging Member States to monitor and report the impact of private quality standards on primary-level food losses.
- Facilitate voluntary dialogue with the retail sector to align private specifications with EU sustainability goals.

2. Date marking and labelling reform

Improve the clarity and consistency of date labelling across the EU by:

- Providing harmonised EU guidance on the correct use of “Best Before” and “Use By” labels, particularly for borderline food categories.
- Standardising label layout, font, and positioning to enhance readability and reduce misinterpretation.
- Promoting the use of science-based, product-specific shelf-life determination over conservative default practices.
- Supporting harmonised enforcement of Regulation (EU) No. 1169/2011 on the provision of food information to consumers among national control authorities.
- Establish legally binding EU-wide definitions and criteria for date labelling, including dual-date labelling and visual cues to reduce consumer confusion and premature disposal.
- Train food business operators on correct labelling interpretation and use.

3. Strengthen fairness and cooperation in Supply Chains

Strengthen contract transparency and address upstream power imbalances by:

- Expand Unfair Trading Practices legislation to cover excessive private standards that result in avoidable food rejection.
- Mandate written contracts that specify quality criteria, volumes, and liability distribution related to rejected products.
- Encourage sectoral codes of conduct and joint forecasting to reduce contract asymmetries.
- Including food waste prevention clauses in vertical agreements throughout the supply chain.
- Develop standardised contract frameworks promoting fair terms, including dispute resolution and food waste clauses.

- Promote contract transparency and fairness to empower producers and support supply of suboptimal products.
- Embed food loss and waste prevention in broader agri-food and environmental strategies.
- Apply fiscal and regulatory incentives to promote low-waste practices.
- Implement sanctions for non-compliance with waste prevention regulations.


Figure 3: Policy Briefs 1

ROSETTA

IMPROVING FOOD SUPPLY CHAIN TO REDUCE FOOD WASTE


- Reduce food waste in supply chain making them more transparent, equitable and efficient.

REFORM COSMETIC QUALITY STANDARD




- Update EU Regulation to allow greater tolerance for visual deviations in fresh products.
- Develop EU-level guidelines defining acceptable cosmetic variation without compromising food safety or nutritional value.
- Monitor and report the impact of private quality standards on primary-level food losses.
- Facilitate dialogue with the retail sector to align private specifications with EU sustainability goals.

DATE MARKING & LABELLING REFORM



- Harmonised EU guidance on the correct use of "Best Before" and "Use By" labels.
- Standardise labelled layout, font, and positioning to enhance readability and interpretation.
- Promoting the use of science-based, product-specific shelf-life determination.
- Harmonised enforcement of Regulation (EU) among national control authorities.
- Set EU-wide legal definitions and criteria for date labelling, including dual dates and visual cues to reduce confusion and waste."
- Train food business operators on correct labelling interpretation and use.

STRENGTHEN FAIRNESS & COOPERATION IN SUPPLY CHAIN



- EU legislation on unfair trading practices to cover excessive private standards to avoid food rejection.
- Mandate written contracts that specify quality criteria & liability distribution to rejected products.
- Sectoral codes of conduct and joint forecasting to reduce contract asymmetries.
- Including food waste prevention clauses in SC agreements.
- Use fiscal/regulatory incentives to promote low-waste practices.
- Embed food loss prevention in agri-food & environmental policies.
- Enforce sanctions for non-compliance with waste reduction rules.

4.3.2 Private and public standard goal

1. Aligning private and public standards

Promote regulatory and voluntary mechanisms to ensure that private food standards are consistent with EU sustainability goals by:

Policy recommendations:



- Facilitate the development of EU-endorsed principles or benchmarks for private standards that avoid conflict with food waste prevention and circular economy objectives.
- Establish multi-stakeholder platforms to regularly assess the environmental and social impacts of private quality standards, with a specific focus on food loss.
- Encourage co-regulation schemes or voluntary codes of practice that bring retailer and certifier requirements into alignment with public objectives, especially regarding the acceptance of suboptimal products.
- Include compliance with sustainability-aligned standards as a condition for access to EU innovation support, funding instruments, and green public procurement opportunities.
- Promote transparency obligations requiring retailers and standard setters to publish criteria and impacts on food loss.
- Use public procurement and investment incentives to reward adoption of sustainability-aligned private standards.
- Include prevention of food waste criteria in public procurement of food services.

2. Encourage voluntary agreements on waste reduction

Support the creation and expansion of voluntary agreements as a flexible and collaborative tool to drive systemic reductions in food waste:


- Encourage Member States to promote national-level agreements with shared definitions, baseline measurements, and science-based food waste reduction targets.
- Develop EU-level guidance for the design, governance, and monitoring of voluntary agreements, including reporting frameworks and performance indicators.
- Encourage cross-country collaboration to share effective food waste reduction practices and support the adoption of successful approaches across regions.
- Ensure transparency and accountability through public disclosure of progress and third-party evaluation mechanisms.
- Facilitate practices aligned with sustainability and waste reduction goals.

Figure 4: Policy Briefs 2


PRIVATE AND PUBLIC STANDARD GOAL

- Ensuring coherence between legal standards and private food standards.




REFORM COSMETIC QUALITY STANDARD

- EU-endorsed principles or benchmarks for private standards that avoid conflict with food waste prevention and circular economy objectives.
- Multi-stakeholder platforms to assess the environmental and social impacts of private quality standards, focus on food loss.
- Co-regulation schemes or voluntary codes of practice to align with public objectives, especially with the acceptance of suboptimal products.
- Compliance with sustainability-aligned standards for access to EU innovation support, funding instruments, and green public opportunities
- Transparency obligations requiring retailers and standard setters to publish criteria and impacts on food loss.
- Use public procurement and investment incentives to reward adoption of sustainability aligned private standards
- Include prevention of food waste criteria in public procurement of food services.



VOLUNTARY AGREEMENTS ON WASTE REDUCTION

- Promote national-level agreements with shared definitions, baseline measurements, and science-based food waste reduction targets.
- EU-level guidance for the design, governance, and monitoring of voluntary agreements, including reporting frameworks and performance indicators.
- Foster cross-country exchange of practices and lessons learned, drawing on existing examples.
- Transparency and accountability through public disclosure of progress and third-party evaluation mechanisms.
- Facilitate practices aligned with sustainability and waste reduction goals.



4.3.3 Suboptimal product consumption

1. Promote secondary markets, and donations for suboptimal products

Encourage the creation of structured market channels for imperfect but edible food:


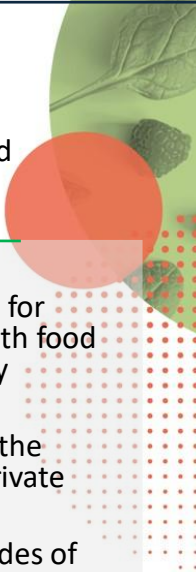
- Provide guidance for integrating suboptimal product streams into retail formats (discount aisles, weekly boxes).
- Promote investment in digital platforms connecting consumers with suboptimal produce.
- Support community-based food hubs or cooperatives selling cosmetically imperfect products.
- Encourage their inclusion in green public procurement policies to boost legitimacy.
- Introduce shelf-space quotas for suboptimal products in supermarkets.
- Launch promotional incentives (discounts, loyalty rewards) to stimulate consumer acceptance.
- Normalise suboptimal products in mainstream retail channels beyond discount markets.
- Encourage to provide financial assistance and logistical support for the redistribution of surplus food. This includes funding for transport and storage, access to appropriate infrastructure, and training for food donation actors, particularly non-profit organisations.

2. Integrate suboptimal foods into public procurement

Unlock the potential of institutional catering to reduce food waste:


- Update EU Green Public Procurement (GPP) criteria to allow suboptimal products.
- Encourage Member States to revise procurement rules that currently exclude imperfect items.
- Provide technical guidance on storage, preparation and presentation of suboptimal foods.
- Support pilot programmes and knowledge-sharing among public institutions.

Figure 5: Policy Briefs 3


PRIVATE AND PUBLIC STANDARD GOAL

- Ensuring coherence between legal standards and private food standards.



REFORM COSMETIC QUALITY STANDARD

- EU-endorsed principles or benchmarks for private standards that avoid conflict with food waste prevention and circular economy objectives.
- Multi-stakeholder platforms to assess the environmental and social impacts of private quality standards, focus on food loss.
- Co-regulation schemes or voluntary codes of practice to align with public objectives, especially with the acceptance of suboptimal products.
- Compliance with sustainability-aligned standards for access to EU innovation support, funding instruments, and green public opportunities
- Transparency obligations requiring retailers and standard setters to publish criteria and impacts on food loss.
- Use public procurement and investment incentives to reward adoption of sustainability aligned private standards
- Include prevention of food waste criteria in public procurement of food services.



VOLUNTARY AGREEMENTS ON WASTE REDUCTION

- Promote national-level agreements with shared definitions, baseline measurements, and science-based food waste reduction targets.
- EU-level guidance for the design, governance, and monitoring of voluntary agreements, including reporting frameworks and performance indicators.
- Foster cross-country exchange of practices and lessons learned, drawing on existing examples.
- Transparency and accountability through public disclosure of progress and third-party evaluation mechanisms.
- Facilitate practices aligned with sustainability and waste reduction goals.



4.3.4 Food waste reduction

1. Support Technological Innovation

Promote R&D that delivers measurable food waste reduction:

- Prioritise funding of shelf-life extension, real-time monitoring and redistribution technologies under Horizon Europe.
- Support Living Labs and innovation hubs that connect food sector actors with technology developers.
- Facilitate SME access to innovation through dedicated support and matchmaking.
- Encourage adoption of AI, IoT and blockchain to optimise logistics and traceability.
- Provide incubation support and regulatory guidance to accelerate deployment of waste-reducing technologies.

2. Implement Target–Measure–Act accountability frameworks

Embed food waste reduction into governance and reporting systems:

- Set food waste reduction targets at Member State and sectoral levels aligned with Sustainable Development Goal (SDG) 12.3.
- Promote use of harmonised measurement methodologies across Member States.
- Build infrastructure for digital reporting and data-sharing.
- Integrate food waste indicators into Environmental, Social and Governance (ESG) frameworks and sustainability reporting.
- Establish national observatories or focal points to monitor progress and coordinate action.
- Require large food businesses to report on waste linked to standards and market practices.
- Automate data collection through digital tools and publish aggregated results to enable evidence-based policy.
- Ensure that food waste legislation is clearly distinguished from agricultural crisis interventions, such as market withdrawals under EU programmes. Recognise their separate objectives and existing redistribution practices, and promote policy coherence.


Figure 6: Policy Briefs 4

ROSETTA

FOOD WASTE REDUCTION


- Covers mechanisms for monitoring, evaluation, technological innovation, and integrated policies

SUPPORT TECHNOLOGICAL INNOVATION



- Prioritize funding for shelf-life extension, real-time monitoring, and redistribution technologies.
- Support innovation hubs and living labs connecting food sector actors with technology developers.
- Facilitate SME access to innovations like AI, IoT, blockchain for logistics and traceability.
- Provide incubation support and regulatory guidance to accelerate deployment of waste-reducing technologies

IMPLEMENT TARGET-MEASURE-ACT ACCOUNTABILITY FRAMEWORKS



- Set food waste reduction targets at Member State and sectoral levels aligned with SDG 12.3.
- Promote harmonized measurement methodologies and digital reporting infrastructure.
- Integrate food waste indicators into ESG frameworks and sustainability reporting.
- Establish observatories or focal points to monitor progress and coordinate action.
- Require large food businesses to report on waste linked to standards and market practices.
- Automate data collection through digital tools and publish aggregated results to enable evidence-based policy.
- Ensure that food waste legislation is clearly distinguished from agricultural crisis interventions, such as market withdrawals. Recognize their separate objectives and existing redistribution practices and promote policy coherence.

4.3.5 Education and collaboration

Supports adoption and cultural acceptance and behavioural change through education and multi-stakeholder engagement:

1. Consumer education and awareness


- Fund large-scale EU campaigns that normalise imperfect foods and promote sustainable habits.
- Integrate food waste prevention into school curricula and teacher training.
- Partner with media, influencers and supermarkets to reinforce consistent messaging.
- Support participatory and citizen science initiatives that encourage household-level change.
- Focus on vulnerable groups and enable peer-to-peer learning models.
- Use positive messaging focusing on environmental, culinary, and social values.
- Tailor campaigns to different audiences and deliver practical tips.
- Engage trusted, unaffiliated influencers and local allies such as chefs.

2. Facilitate stakeholder collaboration

Enable cross-sector platforms to co-create, implement, and monitor food waste solutions:

- Promote creation of multi-actor platforms at EU and national levels for coordinated action.
- Provide funding and tools for collaboration, joint data collection, and project incubation.
- Ensure inclusiveness and transparency through participatory governance.
- Link platform activities to EU policy cycles (e.g., Farm to Fork reporting, Common Agricultural Policy (CAP) strategies).


Figure 7: Policy Briefs 5



EDUCATION AND COLABORATION


- Supports adoption and cultural acceptance through education and multi-stakeholder engagement

CONSUMER EDUCATION AND AWARENESS



- Fund large scale EU campaigns normalizing imperfect foods and promoting sustainable habits.
- Integrate food waste prevention into school curricula and teacher training.
- Partner with media, influencers, and supermarkets for consistent messaging.
- Support participatory initiatives encouraging household-level change.
- Focus on vulnerable groups and enable peer-to-peer learning models.
- Use positive messaging focusing on environmental, culinary, and social values.
- Tailor campaigns to different audiences and deliver practical tips.
- Engage trusted, unaffiliated influencers and local allies such as chefs

FACILITATE STAKEHOLDERS COLABORATION



- Create multi-actor platforms at EU and national levels for coordinated action and knowledge sharing.
- Provide funding and tools for collaboration, joint data collection, and project incubation.
- Ensure transparency and inclusiveness in governance.
- Link platform activities to EU policy cycles (Farm to Fork, CAP strategies).

5. Conclusions and Next Steps

The ROSETTA Project has made significant progress in addressing the critical issue of food waste caused by marketing standards. Through an in-depth review of previous Work Packages, we have identified key challenges and opportunities related to food supply chains, private and public standards, suboptimal product consumption, and food waste reduction. These findings have formed the basis of actionable policy recommendations aimed at reducing food waste across the food value chain.

The next step involves engaging stakeholders through structured consultations, such as roundtables, to refine and validate these recommendations. This collaborative approach will ensure that the policies proposed are both practical and aligned with the needs of the stakeholders involved. These consultations will also contribute to the development of the final policy recommendations, which will be presented in Deliverable 5.2.

As we move forward, the focus will be on influencing the revision of existing marketing standards at both EU and national levels, while continuing to promote sustainable practices and innovation in food systems. The ROSETTA Project aims to significantly reduce food waste by 60-80% through systemic changes in marketing practices, with the ultimate goal of creating a more sustainable and efficient food supply chain.

Annex 1: Consolidation of findings from previous Deliverables

I. Multi-actor Innovation Platforms (MIPs) D1.1 and Stakeholder engagement

The Multi-Actor Innovation Platforms (MIPs) in the ROSETTA project bring together stakeholders from across the food system to collaboratively address food waste. This includes farmers, producers, retailers, policymakers, and consumers, each contributing different perspectives and facing distinct challenges. Through dialogue and cooperation, MIPs promote shared understanding and practical, innovative solutions that reflect the complexity of the supply chain.

Across the reviewed deliverables, various stakeholder perspectives were identified as central to understanding the challenges associated with food loss and waste. The analysis highlighted that producers often face economic and logistical barriers to handling imperfect produce, while retailers are influenced by strict aesthetic standards and inventory management constraints. Policy-related documents emphasised that policymakers encounter regulatory inconsistencies and implementation challenges that hinder waste reduction. Meanwhile, consumer-related findings pointed to behavioural drivers of waste and the potential of public education to shift purchasing habits.

The review also underscored the importance of communication and knowledge sharing between actors in the food system to address systemic inefficiencies. It emphasised the role of trust-building and collaboration in enabling redistribution mechanisms and in supporting the emergence of new business models — such as the marketing of suboptimal food through alternative channels.

The MIPs are designed to support the generation of practical policy recommendations (such as tax incentives for donations and flexible marketing standards) and to facilitate the sharing of best practices from successful initiatives as the project progresses. Looking ahead, scaling up these collaborative approaches and ensuring inclusive stakeholder engagement will be key to designing food waste policies that are both impactful and implementable.

Figure 8: Key stakeholders' groups



Source: Deliverable 1.1

II. Key findings on public and private food marketing standards (D1.2 and D1.3)

Marketing standards, while essential for ensuring food quality, transparency, and consumer protection, can also lead to significant food loss and waste—especially when they impose rigid aesthetic or sizing requirements. The ROSETTA project, through its analysis in Deliverables D1.2 *Analysis of EU, international and national marketing standards* and D1.3 *Analysis of private food marketing standards*, has shown how both public (EU-level regulations) and private (retailer-driven) standards contribute to the rejection of perfectly edible food, from farms to retail shelves.

Public standards, such as those under the EU's Common Market Organisation Regulation, often emphasise visual traits like size and uniformity. These well-intentioned rules can result in the discarding of otherwise good produce, especially when farmers fear non-compliance. Meanwhile, private standards frequently exceed public regulations, reinforcing cosmetic filtering and shifting the burden of compliance to producers, who may face significant losses if their crops do not meet increasingly narrow requirements.

The interaction between public and private standards compounds the issue. Some retailers use public rules as a base, adding more stringent private specifications, which creates inefficiencies, increases costs, and limits the market for suboptimal food. These overlapping demands, paired with buyer-supplier imbalances, discourage producers from marketing non-conforming but safe products, further contributing to food waste.

To address this, ROSETTA proposes several reforms: revising EU marketing standards to permit the sale of cosmetically imperfect food, increasing transparency around private rejection criteria, fostering voluntary agreements for more inclusive specifications, and offering incentives for redistributing or marketing suboptimal products. Greater harmonisation between public and private standards is also needed to reduce duplication and build a more resilient, fair, and circular food system.

III. Actionable recommendations and good practices for marketing suboptimal foods (D2.1)

a. Context and rationale

Suboptimal foods—defined as edible products that deviate from aesthetic or size standards but retain full nutritional and safety values represent a major, underutilised opportunity in the fight against food waste. Deliverable D2.1 *Interventions and good practices for marketing suboptimal foods*, focuses on identifying, documenting, and analysing existing good practices that promote the valorisation, commercialisation, and redistribution of these foods across Europe.

The findings align with growing recognition, also echoed in REFRESH (<https://eu-refresh.org/about-refresh.html>) and the EU FLW Platform (https://food.ec.europa.eu/food-safety/food-waste/eu-actions-against-food-waste/eu-platform-food-losses-and-food-waste_en), that food waste prevention efforts must include targeted strategies to facilitate the movement of suboptimal products into both conventional and alternative markets.

As a growing number of actors (retailers, food startups, NGOs, and public entities) begin to treat suboptimal foods as economic and environmental assets rather than liabilities, understanding and disseminating what works in practice becomes key to scaling systemic change.

b. Typologies of good practices

D2.1 classifies good practices for marketing suboptimal foods into three main domains:

Prevention oriented strategies

These are measures aimed at keeping suboptimal food in the primary supply chain, preventing it from becoming waste in the first place.

Examples and Tools:

- **Pricing differentiation:** Dynamic pricing models offer suboptimal foods at lower prices than their standard counterparts. For example, supermarkets such as Intermarché in France have run campaigns offering "ugly fruits and vegetables" at 30% discount, increasing both sales and public awareness.

- **Visual rebranding:** Using clever marketing (e.g. humorous or emotional campaigns) to shift consumer perception. Initiatives such as Inglorious Fruits and Vegetables or Natur imperfect label these products as “real,” “honest,” or “perfectly imperfect,” reinforcing their desirability.
- **Packaging Innovations:** Individual or portion packaging designed to protect suboptimal foods (e.g. irregular shapes or ripeness levels) while communicating transparency about quality. Packaging often includes messages that normalise imperfections.

Insights:

- Retailers have a critical leverage point to normalise suboptimal foods via shelf placement, signage, and promotions.
- Prevention-based marketing strategies are consumer-centric and require cooperation from branding and communication teams, not just logistics or procurement.

Redistribution mechanisms

Redistribution practices aim to move suboptimal or surplus foods from one actor to another, often targeting food-insecure populations or alternative markets.

Examples and Tools:

- **Food banks and social supermarkets:** Organisations like FEBA (European Food Banks Federation) collect and redistribute suboptimal foods from producers and retailers, feeding millions across Europe.
- **Digital redistribution platforms:** Apps such as Too Good To Go, OLIO, and Karma connect consumers directly with restaurants, supermarkets, or producers offering products at risk of being wasted. These platforms gamify the process, creating engaged communities while enabling transactions at discounted rates.
- **Public-private redistribution agreements:** Partnerships between municipalities, retailers, and NGOs to organise structured redistribution routes. For example, in Barcelona, the city collaborates with retailers and charities to redistribute imperfect produce from wholesale markets to food kitchens.

Insights:

- Redistribution requires efficient logistics, legal clarity (especially around liability), and infrastructure for storage and transportation.
- Trust and transparency between actors are key enablers—especially in cross-sector collaborations.

Transformation and valorisation

When suboptimal foods cannot be sold in their fresh state, they can be processed into new products, extending shelf life and adding value.

Examples and Tools:

- **Juicing, purees, and dried products:** Companies like Rubies in the Rubble (UK) produce chutneys and condiments from cosmetically rejected vegetables. Others produce soups, sauces, or juices from overripe fruit.
- **Institutional catering and school meals:** In some cities, suboptimal foods are procured at low cost for use in public kitchens, creating nutritious meals in schools or elderly homes.
- **Animal feed or bioenergy:** Although lower on the food waste hierarchy, transforming unavoidable waste into animal feed or biogas can still represent a responsible valorisation pathway if human consumption is not viable.

Insights:

- Processing opens opportunities for circular business models, especially for SMEs and social enterprises.
- Success depends on processing infrastructure and consumer trust in safety and transparency of these products.

c. Enabling conditions and common challenges

Successful initiatives for reducing food waste tend to share certain enabling conditions, such as supportive policy frameworks (e.g., food donation liability, taxation, and procurement), strong branding that reframes suboptimal foods as sustainable, access to funding, and data collection for measuring impact. These factors help secure collaboration from stakeholders across the supply chain.

However, there are also common challenges that need to be addressed, including stigmatisation and low consumer awareness about suboptimal foods, logistical bottlenecks (e.g., storage and transportation), legal uncertainties around food safety and liability, and disincentives within private standards that discourage handling non-standard products.

Table 14 shows the relationships between facilitators and obstacles in the suboptimal valorisation of food.

Table 14: Enabler and Barrier for suboptimal food

Enabler	Related barrier	Relationship
Supportive policy frameworks	Stigmatisation and low consumer awareness	Supportive policies help reduce stigma and raise awareness.
Strong storytelling and branding	Logistical bottlenecks	Effective branding helps overcome logistical bottlenecks by educating consumers on suboptimal foods.
Access to funding or seed capital	Legal uncertainties	Funding access facilitates overcoming legal uncertainties regarding food donations.
Data collection and impact measurement	Disincentives within private standards	Impact data can address disincentives by demonstrating the financial benefits of food valorisation.
Consumer education and awareness campaigns	Stigmatisation and low consumer awareness	Informing consumers about food waste and sustainability helps normalise suboptimal products and shifts purchasing behaviour.
Investment in logistics and cold chain	Logistical bottlenecks	Logistical improvements can ease bottlenecks in the redistribution of suboptimal foods.
Legal clarity and standardisation	Legal uncertainties	Addressing legal uncertainties encourages more businesses to engage in redistribution.
Voluntary agreements and incentives	Disincentives within private standards	Reducing disincentives can make it easier for businesses to handle non-standard products.

d. Policy implications and recommendations

To scale up successful practices, the following policy interventions are suggested:

- **Market access:** Introduce an EU-wide "Imperfect but Edible" product category with dedicated labelling and encourage retail quota systems for suboptimal foods.
- **Support redistribution:** Standardise food donation guidelines and offer tax exemptions or incentives, particularly for SMEs and primary producers.
- **Stimulate innovation:** Provide R&D grants for businesses developing processing solutions and include suboptimal food valorisation in green public procurement.
- **Public awareness:** Launch EU-level campaigns to destigmatise imperfect food and incorporate food system education into school curricula to promote sustainable consumption.

The potential of suboptimal food to reduce waste and increase food system resilience is enormous but underexploited. Deliverable D2.1 demonstrates that replicable good practices already exist across Europe, showing it is possible to build viable, circular markets for imperfect products.

Scaling these practices requires an ecosystem approach:

- Policies that reduce regulatory friction and create economic incentives.
- Businesses that rethink quality criteria and connect with sustainability-minded consumers.
- Citizens who understand that beauty is only skin-deep—even when it comes to apples.

The growing number of initiatives in this space show that systemic change is not only desirable, but also achievable, especially when guided by strong, inclusive, and coordinated action across sectors.

IV. Key findings on estimation models from Deliverable 1.4

a. Objective and scope

Deliverable D1.4 *Estimation models of food waste generated by marketing standards* of the ROSETTA project focuses on developing, applying, and refining quantitative estimation models that allow policymakers and stakeholders to better understand how food losses and waste (FLW) are generated across the supply chain because of public and private food marketing standards.

The deliverable takes a data-driven approach to assess how strict, ambiguous, or inconsistent standards—particularly about product appearance, packaging, labelling, and quality grading—can result in the rejection, downgrading, or disposal of otherwise edible food. It also provides pilot scenarios and simulation tools to estimate the potential reduction in food waste under more flexible or optimised standards.

b. Key insights

Standards are a measurable and recurrent driver of food loss

- Aesthetic standards (size, shape, colour, external defects) remain a dominant reason for rejection at the farm and post-harvest level, especially in fruits and vegetables. These losses often go unaccounted in official FLW inventories because they occur before products enter the formal supply chain.
- The deliverable estimates that between 10–30% of fresh produce may be excluded from the market in certain supply chains purely due to marketing specifications, most of which are private retailer standards, not public regulations.
- These exclusions result in three types of losses:
 - **On-farm non-harvesting:** Where products are left in the field due to anticipated non-compliance.
 - **Post-harvest downgrading:** Where products are sorted out during packaging or grading.
 - **Rejected loads:** At the distribution or retail stage due to inconsistencies in batches.

Marketing standards influence multiple stages of the supply chain

The deliverable disaggregates FLW estimates into the stages of the supply chain to determine where marketing standards most strongly contribute to losses:

- **Primary production:** Private standards affect what is harvested and packed. A large portion of "losses" occur *before* the product is measured or counted in official statistics.
- **Post-harvest and packaging:** Here, private compliance practices (e.g., calibration machines, size sorting) result in the removal of "out-of-spec" items, often not due to food safety, but appearance.
- **Retail and distribution:** Strict shelf-life requirements and misunderstanding of "Use By" vs. "Best Before" dates lead to premature removal of stock, often with no recovery pathway.
- **Consumer level:** Marketing influences consumer expectations. Shoppers conditioned to expect "perfect" produce or rigid date labels often discard food that is still safe and edible.

Private standards are a significant blind spot in waste estimation

- While EU public standards have been partly relaxed since 2009 for some product categories, retailer-specific private standards remain stricter and highly variable.
- D1.4 reveals that lack of transparency in private contracts and enforcement mechanisms makes it difficult to obtain reliable data on how many products are excluded for aesthetic or formalistic reasons.
- Despite this, the deliverable manages to estimate the average impact of private standards using pilot data and interviews, indicating that these standards often double or triple the rejection rate compared to public criteria alone.

Estimation models enable scenario analysis for policy design

The deliverable includes simulation models that allow stakeholders to:

- Assess potential food recovery under relaxed standards (e.g., increasing acceptable size range).
- Estimate how redistributing or repurposing "out-of-spec" food would impact overall waste.
- Model the impact of changes in date marking protocols, such as extended "Best Before" periods or freezing before expiration.

This approach empowers evidence-based policymaking, allowing authorities and market actors to understand:

- What standards generate the most avoidable loss.
- Which interventions (flexible grading, visual rebranding, extended labelling) yield the greatest reductions.
- Where to target reforms for maximum impact (e.g., apples and citrus chains showed highest rejection sensitivity in pilot trials).

A foundation for harmonized measurement of FLW from standards

- D1.4 contributes to SDG 12.3 monitoring by proposing indicators that can be used to track food lost due to marketing specifications, distinguishing it from spoilage or logistical waste.
- The models support the use of a “target-measure-act” framework, encouraging businesses and policymakers to:
 - Set thresholds for acceptable levels of product rejection.
 - Measure performance over time.
 - Take corrective action through standard adjustments, traceability, or market incentives.

c. Actionable elements for policy design

D1.4 offers a technical backbone for ROSETTA’s policy work. Its main contributions to the Deliverable 5.1 process include:

- **Evidence to support reform of food marketing standards:**

The models demonstrate that adjusting cosmetic specifications could recover hundreds of thousands of tons of edible food across Europe annually.

- **Policy tools to quantify regulatory impact:**

The simulations provide a mechanism to estimate waste savings from proposed legal or voluntary changes, helping regulators to forecast cost–benefit ratios of reform.

- **Support for monitoring frameworks:**

The deliverable proposes harmonised indicators that can be incorporated into national food waste reporting systems or EU-wide monitoring, helping to ensure that standard-related losses are no longer invisible.

- **Prioritisation of high-impact sectors:**

Some supply chains (e.g., fresh produce, bakery, dairy) are especially sensitive to standard-induced losses. Policymakers can prioritise interventions in these sectors based on modelling results.

V. Key findings on Operational plans for use cases pilot from D 3.1

a. Objective and scope

Deliverable D3.1 *Operational plan of use case pilot experiments* sets out to define how the strategic goals of ROSETTA can be implemented in practice, focusing on identifying the key actors, enabling conditions, operational barriers, and action pathways necessary to translate recommendations, especially those related to optimising marketing standards—into concrete, replicable solutions across the EU food system.

The deliverable draws upon insights from multi-stakeholder workshops, expert interviews, and the early results of pilots to present Operational Plans that support a coordinated, system-wide approach to reducing food waste linked to public and private food standards.

b. Key insights

Stakeholders are open to change, but need support and coordination

- Across the food supply chain—farmers, processors, retailers, distributors, and food service providers—there is growing awareness of the need to reduce food waste and interest in more flexible standards.
- However, these actors are often constrained by conflicting incentives, contractual obligations, and reputational risks:
 - Producers fear losing contracts if they suggest changes to agreed standards.
 - Retailers worry about consumer perceptions and brand impact when marketing “imperfect” food.
 - NGOs and redistribution networks operate with limited infrastructure and unclear liability frameworks.

D3.1 emphasises that enabling change will require a coordinated framework with incentives, legal clarity, and shared accountability.

Key barriers are both operational and cultural

D3.1 identifies multiple levels of obstacles to implementing waste-reducing practices:

- **Technical/logistical:** Many food businesses, particularly SMEs, lack the systems and infrastructure needed to segregate, handle, and commercialise surplus or suboptimal products. Cold chains, packaging, and labelling must often be adapted, which comes at a cost.
- **Regulatory uncertainty:** There is considerable hesitation around redistribution of surplus food, especially regarding liability, food safety (e.g., chilled or perishable goods), and compliance with labelling rules. Many stakeholders reported a lack of standardised EU-wide guidance, particularly for “Best Before” vs. “Use By” date management.
- **Cultural/consumer-side:** There remains a persistent belief (especially among large retailers) that consumers will reject non-standard products, even though research shows rising consumer interest in sustainable choices. This gap between perceived and actual consumer openness is a major bottleneck.

D3.1 calls for parallel actions on technical guidance, legal harmonisation, and consumer engagement to overcome these intertwined barriers.

There is high potential for pilot interventions and innovation

Stakeholders consulted in D3.1 proposed several actionable operational strategies, many of which align directly with the goals of optimising marketing standards:

- **Retail-level pilots** to test new specifications (e.g., wider tolerances for size/colour) in selected categories, supported by in-store communications and discount pricing.
- **Redistribution agreements** between producers, retailers, and food banks, with clearer protocols for packaging, temperature control, and liability sharing.
- **Public procurement reform** to integrate suboptimal and surplus food into institutional catering contracts, creating guaranteed demand and reducing reputational risk for producers.

These pilots are seen as low-risk opportunities to validate standard adjustments, demonstrate impact, and build trust among actors.

Digital solutions and traceability systems are underused

D3.1 points out that digital tools for:

- **Tracking surplus volumes,**
- **Sharing product availability,** and
- **Linking food donors with redistributors**

are available but not yet widely adopted, particularly outside major urban centres. Their underuse limits the ability to create responsive and efficient surplus food flows.

The deliverable recommends greater EU support for the scaling of digital platforms (including open data standards) to facilitate redistribution and reporting.

Voluntary frameworks are promising, but require institutional backing

D3.1 reinforces the importance of voluntary agreements, but cautions that they must be:

- Coordinated at EU or Member State level,
- Supported by common goals and indicators, and
- Linked to public recognition or procurement advantages to gain real traction.

The example of the UK's *Courtauld Commitment* and the Dutch *Green Deal on food waste* are cited as successful governance models worth replicating.

c. Actionable elements for policy and practice

Deliverable D3.1 provides strong practical grounding for many of the themes that appear in Deliverable 5.1. Key operational recommendations include:

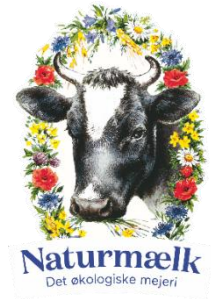
- Create and promote model templates for food donation and redistribution agreements, particularly for products approaching expiration or with aesthetic irregularities.
- Issue clear EU-level operational guidelines on “Best Before” and “Use By” labels in the context of redistribution and donation—including freezing, relabelling, and safe handling procedures.
- Incentivise retail and food service actors to adjust private standards through:
 - Pilot programs,
 - Procurement benefits,
 - Public awards or recognition schemes.
- Promote the role of municipalities and public institutions in leading by example, especially through:
 - Sustainable school meal programs,
 - Public tenders that include surplus products,
 - Support for local redistribution logistics (e.g., refrigerated vans, software platforms).
- Develop training modules and technical toolkits for SMEs to implement changes in sorting, labelling, donation, and alternative marketing, especially for perishable products.

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Reducing food waste due to marketing standards through alternative market access

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