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Reducing Food Waste and its Environmental Footprint through Sustainable Food Systems

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INTRODUCTION

This report provides a detailed review and analysis of the legislative and strategic frameworks governing food waste prevention and management at the EU level, national levels in Italy and Croatia, and regional levels within Croatia and Italy. It also identifies gaps, challenges, and recommendations to enhance the efficiency of the current systems, with particular focus on the Adriatic regions of Italy and Croatia.

The report consists of:

- ★ Review of legislative acts and strategic documents at different levels.
- ★ Identification of regulatory gaps and challenges.
- ★ Policy recommendations for improved food waste management.

Regions included in the report are Italian regions of Veneto, Apulia and Abruzzo and Croatian counties of Primorje-Gorski Kotar, Lika-Senj, Karlovac, and Zadar. The report analyses policy frameworks related to food waste prevention and management in Italy and Croatia, at the national, regional, and supranational levels. It includes the identification of gaps in the current policies, best practices, and recommendations for improvement, as well as a comparison of the frameworks for food waste prevention and management on the regional level in the two countries (regions of Abruzzo and Veneto in Italy, and various counties in Croatia). The review encompasses legislative and strategic actions across EU, national, and regional levels, identifying key gaps and highlighting practical recommendations.

Table 1 illustrates the relationship between legislation and strategic initiatives addressing food waste and sustainability across three administrative levels: EU, national, and regional. At the EU level, legislation consists of overarching directives and regulations such as the Waste Framework Directive (2008/98/EC) and Directive (EU) 2018/851, while strategy is represented by non-binding guidance like the Farm to Fork Strategy, which aims to promote sustainable food systems across Member States. At the national level, each Member State transposes EU directives into its own legal framework, allowing adaptation to specific conditions. National strategies align with EU goals but are (and need to be) tailored to local

contexts. At the regional level, local authorities may introduce additional regulations and implement region-specific strategies, work more closely with NGOs and other stakeholders. This layered governance ensures coherence while allowing for flexibility and responsiveness at different levels.

Table 1: Interconnections of Legislative and Strategic Frameworks Across EU, National and Regional Levels.

Administrative Level	Legislation	Strategy
EU Level	The EU issues directives and regulations that set overarching goals and standards for all Member States. For example, the Waste Framework Directive (2008/98/EC) and Directive (EU) 2018/851, the latter of which is part of the EU's broader Circular Economy Package.	EU strategies, such as the Farm to Fork Strategy are focused on the entire food supply chain, aiming for a sustainable production and consumption system, reducing food waste, and enhancing sustainable practices. Although the strategies themselves are not legally binding, they set the direction for legislative initiatives and policies within the EU.
National Level	Member States must transpose EU directives into their national laws. This means that the EU sets a general legal framework, but each Member State can implement its own acts to achieve general waste management goals, adapting	National strategies typically follow the priorities set by the EU, but they also consider specific national challenges. For instance, the National Plan for the Prevention and

	them to their specific economic, social, and cultural conditions. For example, in Croatia, the Waste Directive has been transposed through the Act on Sustainable Waste Management.	Reduction of Food Waste in Croatia is focused on reducing food waste in line with EU goals, but it is tailored to the Croatian context.
Regional Level	At the regional or local level, authorities can adopt additional regulations that address specific local needs, but these regulations must comply with national legislation and the frameworks set by the EU. For example, certain regions may implement stricter measures regarding food waste prevention in the food sector, such as increasing fines for improper waste disposal or promoting recycling.	Regional strategies often include locally tailored measures for food waste management, taking into account available resources and infrastructure. An example could be regional plans for waste prevention that involve collaboration with local charitable organisations.

POLICY REGULATING FOOD WASTE PREVENTION AND MANAGEMENT: EU LEVEL

Tackling food waste has become a priority for the European Union, which has developed a comprehensive framework of laws and policies to address the issue. By combining regulatory measures with broader sustainability initiatives, the EU aims to reduce food waste at every stage of the supply chain, from production and packaging to consumption and disposal. In the EU, food waste prevention is managed through a framework of directives,

regulations, and targeted strategic measures. The most important legislative and policy documents are presented in Table 2.

In 2016, the Council of the European Union introduced a set of targeted action lines to reduce future food waste and losses. These actions involve Member States in data monitoring, waste prevention, public awareness campaigns, improved interpretation of product labels, and increased donations of unsold food to charities. At the core of the EU's approach to waste management is the Waste Framework Directive (2008/98/EC), which establishes a waste hierarchy prioritizing prevention, reuse, and recycling over disposal. The 2018 revision (EU 2018/851) reinforced these commitments, imposing stronger obligations on Member States to reduce food waste at national and local levels as part of the EU's transition to a circular economy. Furthermore, the directive mandates monitoring and evaluating the implementation of food waste prevention measures.

The Farm to Fork Strategy (2020) is another key initiative within the European Green Deal, aimed at creating a sustainable food system with minimal environmental impact. This strategy integrates food waste reduction with broader sustainability goals, influencing policies related to production, processing, distribution, and consumption. The strategy aligns with the UN Sustainable Development Goals, particularly the target of halving food waste at the retail and consumer levels by 2030.

Packaging plays a vital role in food preservation, and the Packaging and Packaging Waste Directive (94/62/EC) seeks to reduce packaging waste while promoting eco-friendly solutions that help prevent food spoilage. The Unfair Trading Practices Directive (2019/633) addresses issues within the food supply chain by preventing unfair commercial behaviours, such as last-minute order cancellations, which contribute to unnecessary food waste.

Consumer awareness and food labelling regulations are another crucial element in attempts to reduce food waste. The Food Information to Consumers Regulation (1169/2011) aims to reduce household food waste by improving clarity on expiration dates and differentiating between *best-before* and *use-by* labels. Similarly, the Landfill Directive (1999/31/EC) enforces

restrictions on food disposal, limiting the amount of biodegradable waste, including food, sent to landfills and encouraging alternative waste treatment methods.

In addition to these legislative acts, the EU has introduced strategic policies like the Circular Economy Action Plan (2020), which promotes sustainable production and consumption practices and fosters further policy development on food waste prevention. The EU Platform on Food Losses and Food Waste (2016) supports collaboration among Member States, businesses, and NGOs to share best practices and enhance policy coherence.

Agricultural policies also contribute to reducing food waste. The latest reform of the Common Agricultural Policy (CAP) (2023) includes measures to support sustainable farming practices, food donations, and initiatives to minimise food loss at the production level. Similarly, the Sustainable Use of Pesticides Directive (2009/128/EC) aims to reduce pesticide use, preventing crop contamination and unnecessary food losses.

Regulations concerning food donation and the management of food waste also play a significant role. The EU Guidelines on Food Donation provide clarity on food safety and liability issues, encouraging businesses to donate surplus food instead of discarding it. While non-binding, these guidelines facilitate food redistribution and support food waste reduction efforts. Additionally, the Animal By-Products Regulation (EC) No 1069/2009 ensures the safe handling and disposal of animal-based food waste, helping to manage waste that contains animal products while maintaining food safety standards.

The EU has implemented policies to reduce food waste from discarded catches in the fisheries sector. The EU Action Plan against Trafficking in Wildlife aims to combat illegal fishing, which leads to significant fish discards — an often-overlooked source of food waste. Complementing this, the Common Fisheries Policy (CFP) Reform includes measures such as the landing obligation (discards ban), which requires fishers to bring all catches ashore, thereby reducing unnecessary waste in the seafood industry.

Energy recovery from food waste is another aspect addressed by EU regulations. The Renewable Energy Directive (2018/2001/EU) promotes the repurposing of food waste for

bioenergy, providing an alternative to landfill disposal. Additionally, the Industrial Emissions Directive (2010/75/EU) includes measures to reduce food waste generated by the food processing industry. Food safety regulations, like the General Food Law Regulation (178/2002), set guidelines for food donation and redistribution to ensure surplus food can be safely redirected rather than wasted. Meanwhile, the Eco-Design Directive (2009/125/EC) establishes energy efficiency standards for food storage and refrigeration appliances to help reduce food spoilage. Finally, the Directive on Soil Health (proposed in 2023) aims to protect soil fertility and ensure sustainable agricultural practices, preventing food losses due to declining crop yields. Although still under discussion, this directive reflects the EU's growing recognition of the link between environmental sustainability and food waste prevention.

Table 2: EU Legislative and Strategic Acts Review

Document Type	Title	Objective(s)	Implications for Food Waste Prevention	Affected Sectors/Stakeholders	Competent Authority	Status of Implementation
Legislative Act	Waste Framework Directive (2008/98/EC)	Create the waste hierarchy, which includes preventing food waste.	Imposes obligations for recycling, reuse, and waste reduction.	Waste management sector, food industry, municipalities	European Commission	Implemented. Consolidated version 18-2-24.
Legislative Act	Waste Framework Directive 2018/851	Enhance circular economy measures.	Reinforces Member States' obligations for food waste reduction.	Businesses, national and local authorities, agriculture	European Commission	Implemented
Strategic/Planning Act	Farm to Fork Strategy (2020)	Aim for a sustainable food system and reduces food waste.	Promotes eco-friendly approaches throughout the supply chain.	Agriculture, food industry, retailers, consumers	European Commission	Partially implemented, ongoing actions
Legislative Act	Packaging and Packaging Waste Directive (94/62/EC)	Minimize packaging waste while advocating for environmentally friendly packaging solutions.	Encourages eco-friendly packaging to minimize food spoilage.	Food industry, packaging sector, retailers	European Commission	Implemented.
Legislative Act	Unfair Trading Practices Directive (2019/633)	Prevent unfair practices in the food supply chain.	Reduces food waste by preventing last-minute cancellations.	Agriculture, food producers, retailers	European Commission	Implemented
Legislative Act	Food Information to Consumers Regulation (1169/2011)	Improve food labelling clarity.	Reduces consumer confusion about expiration dates.	Food industry, retailers, consumers	European Commission	implemented
Legislative Act	Landfill Directive (1999/31/EC)	Limit biodegradable waste in landfills.	Encourages minimizing, recycling, and diversion of food waste.	Waste management sector, municipalities	European Commission	Implemented
Strategic Plan (Partial Focus)	Circular Economy Action Plan (2020)	Promote a sustainable economy, including food waste reduction.	Supports food waste prevention through new policies & monitoring.	Agriculture, food industry, waste sector	European Commission (DG ENV)	Partially implemented, ongoing actions
Network	EU Platform on Food Losses and Food Waste (2016)	Coordinate EU-wide efforts to reduce food waste.	Provides guidance, data, and best practices.	Member States, businesses, NGOs	European Commission	Ongoing

Legislative Act (Partial Focus)	Common Agricultural Policy (CAP) (latest reform 2023)	Support sustainable agriculture and food security.	Encourages eco-friendly agriculture, charitable food contributions, and minimizing waste.	Farmers, agribusiness, national governments	European Commission	Partially implemented, ongoing revisions
Legislative Act (Partial Focus)	Renewable Energy Directive (2018/2001/EU)	Promote renewable energy, including bioenergy from waste.	Encourages food waste repurposing for energy rather than landfill disposal.	Energy sector, food industry, waste management	European Commission	Implemented
Legislative Act (Partial Focus)	Sustainable Use of Pesticides Directive (2009/128/EC)	Establish a framework for Community action to achieve the sustainable use of pesticides.	Reduces food loss due to contamination or overuse of chemicals.	Farmers, food industry, environmental agencies	European Commission	Implemented and consolidated in the version 26/07/2019
Legislative Act (Partial Focus)	General Food Law Regulation (178/2002)	Ensure food safety across the EU.	Supports food donation and redistribution through clear safety guidelines.	Food industry, retailers, consumers	European Commission	Implemented
Legislative Act (Partial Focus)	Eco-Design Directive (2009/125/EC)	Improve energy efficiency of appliances.	Encourages more efficient refrigeration and storage of food, reducing spoilage.	Manufacturing sector, retailers, consumers	European Commission	Implemented
Legislative Act (Partial Focus)	Industrial Emissions Directive (2010/75/EU)	Reduce environmental pollution from industrial activities.	Encourages food processing industries to minimize food waste.	Food industry, manufacturing sector	European Commission	Implemented
Legislative Act (Partial Focus)	Directive on Soil Health (proposed 2023)	Ensure sustainable soil management and prevents degradation.	Protects soil fertility, reducing food loss due to poor crop yields.	Farmers, food industry, environmental agencies	European Commission	Proposed, under discussion
Strategic Act	EU Guidelines on Food Donation	Provides clarity on food safety and liability issues related to food donation, encouraging more businesses to donate surplus food.	Encourages businesses to donate surplus food.	Processing, Retail, Consumption	European Commission	Non-binding guidelines
Legislative Act (Partial Focus)	Animal By-Products Regulation (EC) No 1069/2009	Regulate the disposal and processing of animal-based food waste.	Ensures safe handling of waste from animal products.	Food industry, waste management sector	European Commission	Implemented
Legislative Act (Partial Focus)	Common Fisheries Policy (CFP) Reform	Reduce discards in fisheries (landing obligation).	Targets food waste in the fishing industry.	Fisheries, seafood industry, policymakers	European Commission	Implemented and updated in 2023

2.1. Key Observations and Policy Implications: EU Level

Collectively, legislative and strategic measures provide a comprehensive framework for preventing food waste, addressing the issue from multiple angles: regulation, industry practices, consumer behaviour, and sustainability initiatives. However, their success ultimately relies on effective implementation, enforcement, and ongoing policy development across Member States.

Policymakers have access to numerous proven tools to accelerate food waste reduction. These include measures to enhance cross-supply chain cooperation, implement advanced forecasting algorithms, relax cosmetic standards for produce, and offer consumers smaller portion sizes and packaging. Additionally, clear communication on best practices for food preservation and markdown policies with dynamic in-store discounts can further influence consumer behaviour. Educational programmes and improved expiry date management also play a crucial role.

Furthermore, several policy tools are available that can promote food waste reduction more effectively than relying solely on voluntary business measures. For instance, mandatory measurement and public reporting of food waste by large food businesses, as currently under consideration in the UK, can provide greater transparency. Bans and taxes on sending food waste to landfills and incineration, as seen in the Netherlands, can significantly reduce waste. Legal obligations for businesses to adhere to the food use hierarchy, such as Spain's draft law, along with penalties for non-compliance, also strengthen policy enforcement. In addition, mandatory participation in food waste reduction agreements, setting reduction targets for large businesses, and stronger Unfair Trading Practices legislation, specifically targeting food waste, can help ensure more effective and widespread implementation.

However, despite increasing attention to food waste reduction, the EU continues to face several critical gaps in policy design and implementation. A major issue remains the absence of binding targets, as most legislation establishes general objectives rather than enforceable

obligations for Member States and businesses. This undermines accountability and progress. There is also a lack of a standardised monitoring system, making it difficult to track and compare food waste data across the EU. Furthermore, sustainability policies remain fragmented, as food waste, climate, and circular economy strategies are frequently developed in isolation from one another.

Gaps in the legislative and strategic documents include:

- insufficient data on food loss and waste levels and the lack of standardised metrics, the need for more targeted interventions and better alignment of food policies with climate action strategies;
- inconsistent implementation across Member States;
- unresolved liability concerns, food safety issues, and traceability requirements that may deter businesses from donating surplus food;
- lack of designated funding for innovation, better coordination among stakeholders, and more comprehensive monitoring systems;
- lack of EU-wide monitoring of food waste and KPIs (Key Performance Indicators) to track progress.

Financial and logistical barriers also hinder effective food redistribution, notably VAT regulations that discourage food donations. In addition, businesses lack adequate support and incentives to adopt food waste reduction practices, particularly in the retail and hospitality sectors.

2.2. Key Policy Recommendations: EU level

1. Introduce legally binding food waste reduction targets for all key sectors.

On 19 February 2025, representatives from the Council Presidency and the European Parliament reached a tentative agreement to revise the Waste Framework Directive. This agreement includes specific EU targets for reducing food waste by 2030 and introduces measures for fostering a more sustainable and less wasteful textile sector. However, both institutions still need to confirm the agreement before it can be formally adopted.

The agreed targets are as follows:

a) 10% reduction in processing and manufacturing waste, based on the average food waste generated in these sectors between 2021–2023,

b) 30% per capita reduction in food waste from retail, restaurants, food services, and households, compared to the average food waste generated in these sectors during the same period (2021–2023).

These targets mark a significant first step at the EU level in combating food waste. Additionally, the agreement encourages the voluntary donation of unsold food that is still safe for human consumption, positioning this as a key strategy for reducing overall food waste.

2. Harmonise measurement and reporting criteria across the EU.

3. Strengthen integration between food waste, environmental, and climate policies.

4. Eliminate VAT-related barriers to food donations and actively promote surplus food redistribution.

5. Increase financial incentives for businesses, including subsidies, tax relief, and recognition schemes.

Collectively, these measures would establish a more coherent and enforceable framework, facilitating substantial progress towards the EU's food waste reduction objectives.

POLICY REGULATING FOOD WASTE PREVENTION AND MANAGEMENT ON THE NATIONAL LEVEL: ITALY AND CROATIA

3.1. Policy Regulating Food Waste Prevention and Management on the National Level: Italy

Italy has transposed EU directives into national legislation and developed specific policies to address food waste (Table 3). At the core of Italy's legal framework lies the incorporation of key EU directives, such as the Waste Framework Directive. This directive has shaped national policies by embedding the principle that preventing food waste should be a priority

throughout all levels of the supply chain. Likewise, regulations like the Unfair Trading Practices Directive (2019/633) and the Landfill Directive (1999/31/EC) further influence Italy's approach by limiting practices that lead to unnecessary food waste. Law No. 116/2020 is designed to transpose the amended Waste Framework Directive (Directive (EU) 2018/851) into national law. This is not merely a matter of compliance; it involves embedding the core principle that food waste prevention must be a prioritised. The Ministry for Ecological Transition is designated as the competent authority, signalling the importance of integrating environmental considerations into waste management strategies. Italy has not only aligned with EU guidelines but has also introduced domestic legislation to facilitate food recovery and redistribution. A significant milestone in this journey was the Good Samaritan Law (Law No. 155/2003), which encouraged food donations by simplifying liability concerns for donors. However, it was Law No. 166/2016 (known as Gadda Law) that marked a turning point in addressing food and pharmaceutical donations on a broader scale. Enacted nearly a decade ago, the Gadda Law sought to reduce waste and increase donations by offering incentives and simplifying regulatory procedures. It replaced a fragmented legal framework with a more coherent system that encouraged voluntary participation without imposing mandatory obligations or penalties on businesses. By simplifying administrative procedures, clarifying donor responsibilities, and offering tax reductions, the law made it easier for companies to donate surplus products, effectively removing bureaucratic barriers that previously discouraged food redistribution. Crucially, complementing these legislative efforts is the Osservatorio Nazionale sulle Eccedenze, sui Recuperi e sugli Sprechi Alimentari (OERSA), a national observatory established to monitor food surplus, promote the recovery and redistribution of unsold food, and improve waste management across the entire food supply chain. OERSA facilitates knowledge sharing and informs policy development through data collection and the promotion of best practices. Regarding food waste generated primarily by households, in 2013 Italy established the Waste Watcher Observatory on domestic food waste, conceived and directed by Prof. Andrea Segrè, with the aim of investigating related to

selling and managing food waste in households. This observatory played an important role during the EXPO in 2015, and more recently, through international collaborations, it evolved into the Waste Watcher International Observatory on Food and Sustainability (WWIO). WWIO aims to investigate the social aspects of community and consumer behaviour for building awareness on the importance of reducing food waste at the consumer level and guide policies and actions for the prevention of food waste by public and private actors. The analysis is based on a standardised methodology, integrating data from the National Institute of Statistics (ISTAT). This allows Waste Watcher to serve as a reference point on food waste at both the national and European levels and as a key tool for the "Zero Waste Campaign".

Among the activities carried out by WWIO, during the National Day for Food Waste Reduction on 5th February every year, an annual report on the food waste generated in Italy is presented. Important insights arise from this report, such as the percentage of national food waste generated not only at the consumer level but also during the overall supply chain. It is worth noting that the food waste generated by the food industry (up to the retail stage) is in line with the European average, while food waste from retailers accounts for around 7%. Another significant finding from this report concerns the Food Insecurity Experience Scale (FIES), a specific metricused to highlight critical issues in food access. Particularly in southern Italy, families experience greater difficulties in accessing food (the FIES in 2025 increased by 13.95% compared with data for 2023), but in the same geographical area, there is also greater domestic food waste.

Table 3: National Legislative and Strategic Acts Review

Document Type	Title	Objective(s)	Implications for Food Waste Prevention	Affected Sectors/Stakeholders	Competent Authority	Status of Implementation
Legislative Act	Law No. 155/2003	Facilitate the donation of food to charitable organisations for social solidarity purposes.	Promotes the reduction of food waste by allowing surplus food to be donated instead of discarded, ensuring proper safety standards.	Charitable organisations, food producers, distributors, retailers	Ministry of Health, Ministry of Agriculture and Forestry	Implemented. Updated in 2017
Legislative Act	Law No. 166/2016 (Gadda Law)	Encourage the donation of food and pharmaceuticals to reduce waste.	Simplifies procedures for food donation, provides tax incentives, and promotes the recovery and redistribution of surplus food.	Food industry, retailers, hospitality sector, non-profit organisations, consumers	Ministry of Agriculture, Food and Forestry Policies	Implemented
Legislative Act (Partial Focus)	Law No. 116/2020	Transpose the amended Waste Framework Directive (Directive (EU) 2018/851) into national law.	Establishes measures to protect the environment and human health by preventing or reducing the adverse impacts of waste generation and management..	Waste management sector, municipalities, businesses	Ministry for Ecological Transition	Implemented
Strategic Plan	National Waste Prevention Programme	Set out strategies to prevent waste generation, including food waste.	Identifies food waste as a priority area and outlines measures to reduce it through awareness campaigns and best practices.	National and local authorities, businesses, consumers	Ministry for Ecological Transition	Implemented
Strategic Plan	National Strategy on Circular Economy	Aim to transition to a circular economy, emphasizing resource efficiency and waste reduction.	Includes indicators and measures specifically targeting food waste reduction.	Agriculture, food industry, waste management sector, consumers	Ministry for Ecological Transition	Updated in 2022
Strategic Plan	National Sustainable Development Strategy	Provide a framework for sustainable development across various sectors.	Addresses food waste within the context of sustainable consumption and production patterns.	National and local authorities, businesses, consumers	Ministry for Ecological Transition	Updated in 2023
Strategic Plan	National Food Waste Prevention Plan (PINPAS)	Focus on preventing food waste at the source and promoting recovery through donations.	Aims to integrate food waste prevention into political agendas, increase awareness, and promote sectoral integration.	Food industry, retailers, hospitality sector, non-profit organisations, consumers	Ministry of Agriculture, Food and Forestry Policies	Implemented
Legislative Act (Partial Focus)	Decree of the Ministry for Environment and Energy Security (10th March 2020) - Minimum Environmental Criteria (MEC) on catering services and food supplies	Establish Minimum Environmental Criteria (MEC) for various sectors.	Sets criteria that indirectly contribute to food waste reduction by promoting sustainable practices.	Public administrations, suppliers, food service providers	Ministry for Environment and Energy Security	Implemented
Legislative Act	Minimum Environmental Criteria (MEC) on Events (DM 19 Ottobre 2022 n. 459, G.U. n. 282 del 2 Dicembre 2022)	Establish MEC on EVENTS to implement mission 1, component 3 of the National Recovery and Resilience Plan (NRRP).	Promotes waste reduction practices in events, including food waste, through measures like sustainable catering, use of biodegradable materials, and donation of surplus food. Aims for more sustainable event management.	Event Organisers, Catering Services, Public Administrations, Suppliers of Event Materials	Ministry of Ecological Transition	National level guidelines — implementation varies by region through local adaptations and enforcement by environmental agencies.
National Observatory on Food Waste	OERSA (National Observatory on Food Surplus, Recovery and Waste)	Serves t Monitor food surplus, promote the recovery and redistribution of unsold food,	Facilitates knowledge sharing and data collection on food waste, informs policy	Ministry of Agricultural, Food and Forestry Policies (MiPAAF), CREA, charitable organisations,	Ministry of Agricultural, Food and Forestry Policies (MiPAAF), CREA, charitable organisations,	Active since 2016, with periodic updates.

		raise consumer awareness, and improve waste management across the food supply chain.	development, and promotes best practices across the food supply chain.	consumers, agricultural businesses, distribution sector	consumers, agricultural businesses, distribution sector	
Agreement	Agreement with the National Association of Italian Municipalities (ANCI) (2017)	Target food waste reduction in public catering, including school meal programmes.	Implements best practices, education programmes, and awareness campaigns to prevent food waste.	Schools, public institutions, hospitality services	Ministry of Education, Ministry for Ecological Transition	Implemented
Policy instrument	Food Income	Combat food waste while addressing poverty through the redistribution of unsold food to vulnerable populations.	Directly reduces food waste by redirecting edible but unsold food to those in need. Encourages better inventory management and collaboration between retailers, food banks, and social services.	Retailers, Food Banks, Social Services, Vulnerable Populations	Municipalities	Experimental instrument

To support legislative measures, Italy has also implemented strategic plans aimed at reducing waste at its source. The National Food Waste Prevention Plan (PINPAS) integrates food waste reduction into political agendas, promotes social awareness, and encourages donation initiatives. The National Waste Prevention Programme further strengthens this framework by identifying food waste as a priority area and outlining measures such as awareness campaigns, best practices, and targeted policies to minimise waste generation.

Meanwhile, memoranda of understanding, such as the Agreement with the National Association of Italian Municipalities (ANCI), focused on reducing food waste in public catering through educational programmes and awareness campaigns. This initiative has since concluded.

In a further step toward addressing food waste and social welfare, the Ministry of Labour and Social Policy's Decree No. 78/2023 introduced the *Food Income* measure, also known as the Food Bonus. This initiative, part of the 2023 Budget Law, aims to reduce food waste while providing support for those living in extreme poverty. It seeks to prevent the disposal of 230,000 tonnes of unsold food from large retailers and helps support at least 3 million Italians. The decree is experimental, initially targeting selected capital

cities based on poverty levels, the equitable distribution of food, and available resources. Food packages containing unsold food donated by commercial establishments are distributed by third-sector organisations in these cities. The programme also serves as a mechanism to address severe material deprivation.

The decree specifies that beneficiaries may include individuals identified through the FEAD programme and other individuals reported by local social services or third-sector entities. This comprehensive approach to food redistribution demonstrates Italy's commitment to combining social welfare with sustainable food practices, creating a system that addresses both food waste and poverty.

Furthermore, Italy has established Minimum Environmental Criteria (MEC) on Events through Decree No. 459 of October 19, 2022. This decree promotes waste reduction practices in events, including food waste, by implementing sustainable catering, using biodegradable materials, and donating surplus food. These measures aim for more sustainable event management and consumption, aligning with the National Recovery and Resilience Plan (NRRP).

Italy's approach aligns with similar efforts across Europe. France's Law No. 138 (2016) bans large supermarkets from destroying unsold food, requiring them to donate instead, with the policy later expanding to the catering and food industries. In Hungary, legislation passed in 2022 mandates that major foreign supermarket chains donate food close to expiration, benefiting locally owned businesses. Spain's 2022 law compels restaurants to provide leftover meals in takeaway containers for customers who request them, promotes the sale of organic and locally sourced products, and repurposes unfit food for animal feed, compost, or biofuels. Non-compliance results in penalties, reinforcing Spain's commitment to food reuse.

Food waste continues to be a significant challenge across Europe, with each nation adopting its own strategies to tackle the problem.

Currently, the Italian Parliament is reviewing several legislative proposals aimed at reducing food waste. Among these proposals are Bills DDL AS 972, 1145, and 1167, each addressing the issue from different perspectives.

DDL AS 972, for example, focuses on raising consumer awareness by promoting responsible and sustainable consumption. This bill proposes the establishment of a fund to finance innovative projects aimed at reducing food waste, encouraging practices such as responsibly taking home leftovers. The goal is to change consumer behaviour, making them more aware of the impact their choices have on the environment and society.

DDL AS 1145, on the other hand, concentrates on supporting municipal projects that work to reduce food waste. It promotes awareness and training initiatives, engaging local governments in waste management and reduction efforts. The idea is to create a network of local initiatives that can make a significant impact at the community level.

DDL AS 1167 is perhaps the most ambitious of the three, as it aims to amend existing legislation to integrate food waste reduction goals. This bill mandates that surplus food be donated free of charge to eligible recipients, helping to cut post-harvest losses and halve food waste by 2030. This objective aligns with Italy's international commitments and represents a significant step toward a more sustainable economy.

Alongside these bills, two additional legislative proposals approach food waste from different angles.

Proposal A.C. 1643 introduces a requirement for restaurants to allow customers to take home leftovers, a practice known as the "doggy bag". While this may seem like a minor detail, it represents an important cultural shift by encouraging consumers to avoid wasting uneaten food.

Finally, Proposal A.C. 1638 focuses on reducing waste in the food service sector through the reuse of surplus food. This proposal includes tax incentives for businesses that repurpose agricultural waste into usable products, such as biogas or compost. The goal is to promote

a circular economy in the agri-food sector, reducing waste while creating new economic opportunities.

The two proposals, A.C. 1638 and A.C. 1645, share the goal of reducing food waste but differ in their methods. Proposal A.C. 1638 promotes the use of food bags as part of a broader voluntary strategy to encourage sustainable behaviours in the food supply chain. In contrast, A.C. 1645 mandates take-out practices for unconsumed food, with penalties for non-compliance, aligning with a more regulatory model inspired by the French approach.

Both proposals emphasise the need to raise awareness among restaurateurs and consumers, though A.C. 1638 briefly mentions information campaigns, leaving implementation to a "Permanent Table," while A.C. 1645 addresses awareness indirectly. The lack of detailed plans for awareness campaigns in both proposals limits their potential to challenge social norms, such as the stigma surrounding food bags (”doggy bags”).

While the regulation may yield minimal immediate food savings, it fosters sustainable practices and lifestyles, which are vital for long-term reductions in food waste and overall sustainability.

3.1.1. Key Observations and Policy Implications: Italy

Italy has positioned itself at the forefront of food waste prevention efforts, combining legislative measures with cultural initiatives. Despite these efforts, Italy continues to face a range of systemic challenges in effectively reducing food waste. A major issue is the fragmentation of legal and policy frameworks, with regulations scattered across multiple levels of governance, leading to confusion and operational inefficiencies. There is also weak enforcement, with limited monitoring mechanisms and no mandatory targets for food waste reduction. Another significant obstacle lies in the funding structures, as many initiatives depend on short-term financing, limiting long-term planning and lasting impact. The private sector remains insufficiently engaged, with logistical challenges and tax disincentives making disposal a more appealing option than redistribution. Additionally, public awareness efforts lack measurable outcomes, making it difficult to evaluate their effectiveness. Innovation also

lags behind, as research on food waste solutions is inconsistently adopted by businesses and seldom integrated into local policy frameworks.

3.1.2. Key Recommendations: Italy

1. Develop a comprehensive national food waste strategy that consolidates existing legislation and establishes clear, measurable targets.
2. Introduce mandatory tracking and reporting obligations for supermarkets, producers, and food service operators.
3. Provide financial incentives, including tax relief measures and stable, long-term funding for waste reduction initiatives.
4. Promote research and foster public-private partnerships to scale up innovative and scalable food waste reduction solutions.
5. Strengthen education and awareness-raising programmes with measurable outcomes to effectively influence consumer behaviour.

These steps aim to build a more cohesive, accountable, and forward-looking food waste management system in Italy.

3.2. Policy Regulating Food Waste Prevention and Management on the National Level: Croatia

Following EU accession in 2013, Croatia has gradually created a comprehensive national and regional policy framework aimed at preventing and reducing food waste. At the national level, this framework has primarily been shaped by the mandatory transposing of the relevant EU directives into national law, resulting in a solid legal and strategic foundation aligned with European standards and sustainability goals — particularly Sustainable Development Goal (SDG) 12.3, which aims to halve per capita food waste by 2030. Table 4 presents the most important legal and strategic documents regulating the prevention and reduction of food waste in Croatia. At the top of the list is the Waste Management Act (Official

Gazette 84/21, 142/23), which provides the legal basis for all activities in this domain. It incorporates the principles of the EU waste hierarchy and implements them at the national level by prioritising waste prevention at source. Waste Management Act (Official Gazette 84/21, 142/23) obliges relevant stakeholders to establish robust food waste monitoring systems and actively promotes food reuse and redistribution, particularly through structured food donation initiatives.

The legislation is complemented by two key documents: the Act on Agriculture (Official Gazette 118/18) and the Ordinances on the Conditions, Criteria, and Methods of Donating Food and Animal Feed (Official Gazette 119/15). Together, these legal acts form a solid operational basis for the integration of food waste prevention into a broader agricultural sustainability policy. The Act on Agriculture integrates food waste reduction into rural development strategies and ensures a cross-sectoral links between food security and sustainable agricultural practices. At the same time, the regulation provides detailed operational and safety guidelines necessary for the safe redistribution of surplus food and strengthens practical harmonisation with EU standards.

The Act on Agriculture (Official Gazette 118/18)17 defines food waste planning as part of the sustainable management of agricultural resources, focusing on food prevention and donation. It is oriented towards the top of the EU waste hierarchy and provides for the development of a national food waste reduction plan (Art. 81–84) but does not include measures for recovery or disposal. It focuses primarily on agricultural production and processing, with limited impact on sectors such as catering and retail. Weakly enforced provisions, a lack of infrastructure, and inconsistent data collection are the main challenges to effective implementation. The Ordinance on Conditions, Criteria, and Methods for Donating Food and Animal Feed (Official Gazette NN 119/2015) establishes the legal framework for the donation of food and feed with the aim of preventing food waste and promoting the responsible use of surpluses. It aligns with the principles of the EU waste hierarchy, particularly in the areas of prevention and reuse of food through structured

donation systems (Article 1; Articles 5–9). The regulation sets out clear conditions for safety, legal compliance, and procedures for all actors involved, including producers, intermediaries, NGOs, final recipients, and logistics providers (Article 3). As an important mechanism to reduce food waste, the regulation directly prevents the destruction of surplus food nearing its expiry date by allowing its redistribution in accordance with food safety and traceability standards (Article 9). The regulation requires intermediaries to keep records of food donations (Article 11) but does not include specific indicators to assess performance at a systemic level. Implementation faces challenges such as limited institutional resources for enforcement, low awareness among businesses, insufficient infrastructure for food redistribution, and a lack of financial incentives for participation. Nevertheless, the regulation provides an essential foundation for developing a more effective and integrated model for reducing food waste through the donation of surplus food.

Strategically, Croatia has adopted two successive national plans that explicitly focus on food waste prevention: the foundational Plan for the Prevention and Reduction of Food Waste in Croatia 2019–2022 (Official Gazette NN 118/2018), which aligns national priorities with EU and global targets, and the more comprehensive Plan for the Prevention and Reduction of Food Waste in Croatia 2023–2028 (Official Gazette NN 118/18, 42/20, 127/20). The current plan sets ambitious targets and aims to reduce food waste by 30 % by 2030. Key measures include the harmonisation of legislation, intensive mobilisation of stakeholders, public awareness campaigns, digital innovation pilots, and increased institutional coordination. The Ministry of Agriculture leadsthese efforts in close cooperation with the Ministry of Environmental Protection and Green Transition, supported by regional and local governments and civil society actors.

In 2021, the Ministry of Agriculture of the Republic of Croatia developed three strategic documents to reduce food waste in key sectors of the food system, namely the following guidesr:

1. Reducing Food Waste in Primary Production,

2. Reducing Food Waste in Retail,
3. Reducing Food Waste in Hospitality and Institutional Kitchens.

These strategic documents are designed to provide specific and practical recommendations to improve the efficiency of food waste management in these sectors, while supporting food donation and circular economy models.

To improve the efficiency of agricultural production and minimise the waste in the primary sector, the *Guide for Reducing Food Waste in Primary Production* provides recommendations for farmers. This guide offers measures to reduce food waste in primary production by improving harvesting techniques, ensuring proper storage, and promoting reuse through measures such as modern soil preparation and crop protection methods, while diverting produce that does not meet market standards into processing or as animal feed. Surpluses may also be used for composting, bioenergy production, or donations. In retail, the *Guide for Reducing Food Waste in Retail* advises retailers on ordering goods based on customer demand, using digital tools to monitor stock levels and expiry dates, and working more closely with suppliers and logistics providers, while encouraging the donation of surplus food. These measures can significantly reduce spoilage and improve supply chain efficiency. The *Guide to Reducing Food Wastes in Hospitality and Institutional Kitchens* provides practical suggestions for reducing food waste through responsible meal planning, buying ingredients from local producers, and making use of leftover foods. These measures are accompanied by staff training on the proper storage and handling. Such actions help avoid unnecessary waste, promote more sustainable uses of foods, and contribute to SDG 12.3 goals. While these guides align with EU and national sustainability policies, they are non-statutory and rely on goodwill and voluntary engagement of stakeholders across production, retail, and the hospitality industry.

Table 4: Croatian National Legislative and Strategic Acts Review

Document Type	Title	Objective(s)	Implications for Food Waste Prevention	Affected Sectors/Stakeholders	Competent Authority	Status of Implementation
Legislative Act	Zakon o gospodarenju otpadom (Waste Management Act) (NN 84/21, 142/23) Available at: https://narodne-novine.nn.hr/clanci/sluzbeni/2021_07_84_1554.html	Establish a framework for preventing and reducing waste to protect health and the environment, based on the EU waste hierarchy.	Encourages food waste prevention through waste reduction, reuse, and recycling measures.	Food industry, retail, hospitality, public institutions, households, local authorities, waste companies, NGOs.	Ministry of Environmental Protection, Environmental Fund, local and regional governments.	Implemented. Challenges remain in enforcement, infrastructure, and awareness.
Legislative Act	Zakon o poljoprivredi (Act on Agriculture) (NN 118/2018) Available at: https://narodne-novine.nn.hr/clanci/sluzbeni/2018_12_118_2343.html	Define agricultural policies, food quality standards, and includes measures to prevent food waste and promote food donation.	Promotes food waste reduction, food donations, sustainability, and awareness across all stages of the food chain.	Food producers, processors, retailers, hospitality, institutional kitchens, households, donors, charities, Ministry of Agriculture.	Ministry of Agriculture	Implemented. Focused on prevention and donation. Limited scope on recycling/disposal.
Legislative Act	Pravilnik o uvjetima, kriterijima i načinima doniranja hrane i hrane za životinje (Ordinance on the conditions, criteria and methods of donating food and animal feed) (NN 119/2015) Available at: https://narodne-novine.nn.hr/clanci/sluzbeni/2020_09_99_1878.html	Establish conditions, criteria, and methods for food and feed donations, including responsibilities for intermediaries.	Supports food waste prevention by promoting donations of surplus food, aligning with the EU waste hierarchy through prevention and reuse.	Food industry, animal feed industry, NGOs, charities, consumers, logistics providers, Ministry of Agriculture.	Ministry of Agriculture of the Republic of Croatia	Structured framework in place. Implementation ongoing; enforcement and infrastructure gaps present.
Strategic/Planning /Programmatic Act	Plan o sprječavanju i smanjenju nastajanja otpada od hrane Republike Hrvatske 2019.–2022. (Plan for the Prevention and Reduction of Food Waste in Croatia) (NN 118/2018) Available at: https://narodne-novine.nn.hr/clanci/sluzbeni/2019_06_61_1169.html	Reduce food waste across the supply chain by aligning with EU/UN goals (SDG 12.3), emphasizing prevention and responsible consumption.	Focuses on prevention and re-use through donations, improving legislation, public awareness, stakeholder coordination, and tracking systems.	Food producers, retailers, consumers, hospitality sector, food donation organisations.	Ministry of Agriculture (with coordination from other ministries including Environmental Protection)	Implemented. Completion phase; evaluated as a basis for the next planning period.
Strategic/Planning /Programmatic Act	Plan o sprječavanju i smanjenju nastajanja otpada od hrane Republike Hrvatske 2023.–2028. (Plan for the Prevention and Reduction of Food Waste in Croatia 2023–	Outline Croatia's strategy to halve per capita food waste by 2030, in line with SDG 12.3, focusing on prevention, redistribution, and sustainability.	Emphasises awareness, education, food donations, regulatory support, infrastructure improvements, and data tracking across the supply chain.	Producers, retailers, hospitality, institutional kitchens, households, NGOs, charities, logistics providers, Ministries of Agriculture and Environment.	Ministry of Agriculture, Local and Regional Self-Government Units (JLP(R)S)	Implementation ongoing. Comprehensive plan adopted; monitored with defined reduction targets.

	2028) (NN 118/18, 42/20, 127/20) Available at: https://narodne-novine.nn.hr/clanci/sluzbeni/2022_12_156_2535.html					
Strategic/Planning /Programmatic Act	Vodič za smanjenje otpada od hrane u primarnoj proizvodnji (Guide for Reducing Food Waste in Primary Production) (2021) Available at: https://poljoprivreda.gov.hr/UserDocsImages/dokumenti/hrana/vodici/Vodic_za_smanjenje_otpada_od_hrane_u_proizvodnji_i_preradi_hrane.pdf	Provide practical guidance for reducing food waste in primary production by improving harvesting, storage, and processing efficiency.	Offers strategies for minimizing on-farm losses, reusing surplus as feed or compost, promoting donations, and supporting circular economy practices.	Farmers, agricultural cooperatives, food processors, retailers, NGOs, and government bodies involved in agriculture and food safety.	Ministry of Agriculture of the Republic of Croatia	Voluntary implementation; not legally binding. Depends on stakeholder engagement.
Strategic/Planning /Programmatic Act	Vodič za smanjenje otpada od hrane u trgovini (Guide for Reducing Food Waste in Retail) (2021) Available at: https://poljoprivreda.gov.hr/UserDocsImages/dokumenti/hrana/vodici/Vodic_za_smanjenje_otpada_od_hrane_u_trgovini.pdf	Guide the retail sector to reduce food waste through supply chain efficiency, inventory control, and sustainable practices aligned with the EU waste hierarchy.	Promotes demand-based purchasing, expiration-based discounts, improved storage, consumer education, donations, and digital inventory tools.	Retailers, wholesalers, food producers, logistics companies, consumers, and public authorities (e.g., Ministry of Agriculture).	Ministry of Agriculture of the Republic of Croatia	Voluntary implementation; not legally binding. Effectiveness depends on retailer engagement, infrastructure, and regulatory support.
Strategic/Planning /Programmatic Act	Vodič za smanjenje otpada od hrane u ugostiteljstvu i institucionalnim kuhinjama (Guide for Reducing Food Waste in Hospitality and Institutional Kitchens) (2021) Available at: https://poljoprivreda.gov.hr/UserDocsImages/dokumenti/hrana/vodici/Vodic_za_smanjenje_otpada_od_hrane_u_ugostiteljstvu_i_institucionalnim_kuhinjama.pdf	Provide practical advice to reduce food waste in hospitality and institutional kitchens through better food handling, preparation, and storage, aligning with SDG 12.3 and national strategies.	Encourages demand-based procurement, surplus food reuse and donation, staff awareness, local sourcing, and optimised storage/preparation techniques.	Restaurants, hotels, catering services, institutional kitchens, consumers, food suppliers, NGOs, and food donation platforms.	Ministry of Agriculture of the Republic of Croatia	Voluntary implementation; not legally binding. Challenges include staff training, storage infrastructure, monitoring, and regulatory barriers.

3.2.1. Croatia's Best Practice: Ministry of Agriculture – Systemic Effort in Preventing Food Waste and Promoting Food Donation in Croatia

Over the past several years, the Croatian Ministry of Agriculture has launched a comprehensive set of activities aimed at reducing food waste and strengthening food donation practices. These initiatives demonstrate how a country of modest size can develop a relatively coherent system that addresses food waste across all levels of the chain —from production and retail to households — while ensuring that surplus food reaches those in need.

A cornerstone of Croatia's efforts is the National Plan for Preventing and Reducing Food Waste for the period 2023–2028, adopted by the Government of the Republic of Croatia in December 2022. The Plan was prepared pursuant to the Agricultural Act and represents the continuation of work initiated under the earlier Food Waste Prevention Plan for 2019–2022. It is fully aligned with the European Union's Circular Economy Action Plan and Sustainable Development Goal 12.3, which calls for halving per capita food waste by 2030 and reducing food losses across supply chains. The National Plan outlines several lines of action: developing an efficient system for food donation, promoting corporate responsibility within the food industry, introducing food waste measurement systems across sectors, integrating food waste topics into formal and informal education, investing in research and innovation, and raising consumer awareness through targeted campaigns. Together, these measures aim to create a cultural shift, making food waste reduction a shared social responsibility.

Public engagement has been recognised as a particularly critical dimension of the strategy, given that studies consistently show that households generate a significant share of food waste. For this reason, the Ministry of Agriculture launched a nationwide awareness campaign under the slogan *Pojedi, podijeli. Hrana nije otpad* (*Eat, share. Food is not waste*). Central to this campaign is an animated video featuring a child named Dora, who serves as

the voice of the younger generation and delivers simple, memorable advice for reducing food waste at home. By placing a child at the centre of the campaign, the Ministry sought to appeal emotionally to families and encourage intergenerational responsibility. The campaign materials highlight practical steps such as better meal planning, cookbooks, proper food storage, and the donation of surplus food. In addition, the campaign links the individual household actions to the national and global objective of halving food waste by 2030, thereby helping citizens see their personal role within a larger sustainability framework.

Education and capacity-building initiatives complement the media campaign. Informational and educational materials have been developed both for children and for adults, ensuring that awareness-raising extends beyond advertising into formal learning environments. Schools have been identified as important partners in transmitting values of sustainable consumption to the next generation, and teaching resources have been produced to help educators address the topic in the classroom. The Ministry also regularly marks international events such as the Food Loss and Waste Awareness Day with public outreach activities, ensuring that the issue remains visible and relevant.

Alongside awareness and education campaigns, Croatia has developed a transparent regulatory framework for food donation, which is a crucial mechanism for redirecting surplus food toward donations. According to the Ordinance on Food and Feed Donation, only entities registered in the official Register of Intermediaries may serve as facilitators of food donation. This ensures that donation practices are carried out in accordance with food safety standards and with proper oversight. NGOs and other eligible entities can apply to be entered into the Register when they meet two main conditions: they must be legally registered in Croatia and must operate facilities that are themselves registered in the official registry of food business premises. The registration process requires the submission of an application form and supporting documentation, after which the Ministry issues a formal decision on entry into the Register. This procedure creates accountability in the food

donation system. To support intermediaries, the Ministry has published a *Guide for Food Donation* which details how food donation should operate in practice. The guide clarifies legal obligations, documentation requirements and reporting duties while also offering practical advice for day-to-day operations. The guide also addresses sensitive issues such as how to handle donations past their *best-before* date, clarifying that such donations are permissible provided that the food is safe and recipients are informed and consent to receiving it. The guide further stresses that donations must be used exclusively for humanitarian purposes and not for commercial gain. Intermediaries retain the discretion to refuse donations if they cannot guarantee food safety, reinforcing the principle that donation should never compromise public health. To make the process more efficient, the Ministry has launched a digital platform known as *e-doniranje*, which allows donors to register surplus food and intermediaries to quickly identify and collect donations. This tool improves coordination between stakeholders, reduces administrative burdens, and helps ensure that food reaches recipients in a timely manner.

Another important pillar of Croatia's best practice model is *multi-stakeholder collaboration*. Recognizing that government action alone cannot achieve the ambitious goals set in the national plan, the Ministry facilitated the signing of a voluntary agreement titled *Zajedno protiv otpada od hrane* (*Together Against Food Waste*) in March 2023. 33 stakeholders from across the food system, including producers, retailers, municipalities, civil society organisations, and academic institutions signed the agreement, committing to implement concrete measures for reducing food waste and increasing food donation within their respective sectors. This voluntary approach builds a culture of shared responsibility and mutual accountability, allowing the private sector and civil society to take ownership of the agenda while receiving recognition for their contributions. The agreement also links national initiatives to the reforms contained in the National Recovery and Resilience Plan, providing additional policy coherence and continuity.

Croatia's approach to preventing food waste and promoting food donation illustrates how a country can integrate legislation, education, public awareness, and digital innovation into a unified system. The legal framework provides certainty and safety; the public campaigns and educational efforts mobilise citizens; guidance documents and digital tools support intermediaries in their operations; and voluntary agreements bring together diverse stakeholders in a common cause. This comprehensive model not only aims to reduce the environmental and economic costs of wasted food but also strengthens social solidarity by channelling surplus food toward vulnerable groups.

3.2.2. Key Observations and Policy Implications: Croatia

Despite this significant legislative and operational progress, important implementation challenges remain. Many of the strategic documents and guidelines remain voluntary and therefore lack legal enforceability, monitoring obligations, and economic incentives. As a result, they are implemented only sporadically and rely more on individual motivation than on systematic political commitment.

Coordination between key bodies, and between national and regional levels of government is not always optimal, and it can undermine policy coherence and resource use efficiency. Regional and local authorities, which are crucial for translating national strategies into practical measures, often face constraints such as limited financial resources and administrative capacity, and a lack of technical expertise, which restricts their ability to contribute to solutions as much as they might wish.

A further weakness in food waste prevention and waste reduction efforts lies in Croatia's infrastructure for data collection and monitoring. Although performance monitoring is emphasised in the national strategy documents, KPIs remain insufficiently developed. The lack of mandatory sector-specific reporting and integrated data systems significantly limits evidence-based policymaking, international benchmarking, and accurate assessment of

policy impact. Moreover, fiscal and regulatory incentives for the redistribution of food surpluses remain underdeveloped. In particular, mechanisms such as VAT exemptions or targeted tax deduction —, which have proven effective in other EU Member States — are lacking.

On the other hand, the National Plan for Preventing and Reducing Food Waste for the Period 2023–2028, adopted by the Government of the Republic of Croatia, provides a clear strategic vision that emphasises innovation, digital solutions, and multistakeholder collaboration. Successful local and regional pilot initiatives, particularly in city centres such as Rijeka, demonstrate practical models that could be scaled up across the country. Greater institutional alignment, targeted fiscal incentives, and robust monitoring systems could transform Croatia's current framework from fragmented, voluntary efforts into a coherent, effective national policy response that is fully aligned with EU standards and global sustainability goals. The Croatian national framework for food waste prevention contains several important lessons and policy implications:

- Croatia has effectively transposed key EU directives into its national legal framework, ensuring basic alignment with SDG 12.3 and broader sustainability principles.
- Despite strong legislative alignment, the practical implementation of food waste prevention measures remains uneven and largely dependent on voluntary compliance, which significantly limits measurable impact and accountability.
- Operational gaps in monitoring and evaluation significantly hinder the assessment of policy effectiveness and restrict evidence-based decision-making and improvement processes.
- The fragmentation of policy responsibilities between ministries and different levels of government is a fundamental challenge that limits coherent policy implementation and effective utilisation of resources.

- The lack of economic incentives significantly weakens the engagement of the private sector, especially SMEs and food supply chain actors, which reduces the efficiency of the overall system and prevents scalable, sustainable solutions to food waste.

Addressing these weaknesses requires a more integrated, incentivised and systematically monitored approach with stronger institutional commitment at both national and local level.

3.2.3. Key Recommendations: Croatia

Although Croatia's national policy framework for food waste prevention is broadly aligned with EU directives and international sustainability goals, several structural and operational barriers hinder its full and effective implementation.

Local implementation capacity remains very limited. Municipalities and regional authorities often lack adequate infrastructure, funding, and trained staff to implement national food waste prevention strategies effectively. In addition, the absence of clearly defined local commitments and supporting guidelines contributes to inconsistent policy application, particularly in rural or economically less developed areas. Furthermore, reliance on voluntary sectoral guidelines — although technically comprehensive — leads to fragmented and inconsistent implementation across the primary production, retail, hospitality, and mass catering sectors. Without economic incentives or regulatory pressure, compliance with these voluntary recommendations relies heavily on the initiative of individual stakeholders, resulting in sporadic, localised progress rather than systematic change. Fragmentation between ministries is another significant obstacle. In Croatia, responsibilities for food waste reduction are primarily divided between the Ministry of Agriculture and the Ministry of Environmental Protection and Green Transition. This fragmentation results in unclear responsibilities, duplication of efforts, inefficient use of resources, and reduces the overall coherence and effectiveness of the policy. Awareness-raising and public engagement have also not yet been sufficiently prioritised. Despite existing campaigns, changes in consumer

behaviour and the engagement of small and medium-sized enterprises (SMEs) remain slow, as messages are not targeted enough and awareness-raising work is limited, particularly concerning the tangible economic, environmental, and social benefits of preventing food waste. Finally, a major obstacle identified in Croatia is the insufficient development of data and monitoring systems. While national strategic plans explicitly call for improved monitoring and evaluation, operational capacity remains limited due to a lack of standardised KPIs and clear reporting requirements. As a result, policymakers lack accurate, disaggregated data to assess policy effectiveness and plan evidence-based interventions.

To effectively address these gaps and capitalise on existing strengths within the national framework, Croatia should take targeted policy measures, including:

- Strengthening enforcement and oversight mechanisms, particularly through clear guidelines, defined responsibilities, and resource allocation for food waste and donation programmes at the local level.
- Introducing clear economic incentives, such as VAT exemptions, tax credits, or other fiscal instruments, to systematically encourage businesses to participate in food donation and circular economy initiatives.
- Introducing mandatory measurement and reporting requirements for large retailers, catering businesses, commercial kitchens, and public institutions to generate reliable, comparable data essential for policy monitoring and evaluation.
- Developing and operating a robust national data infrastructure that connects existing digital platforms for food donation with national databases and enables comprehensive tracking, reporting, and benchmarking against SDG 12.3 targets.
- Improving cross-sectoral coordination, ideally through a formalised inter-ministerial coordination body that streamlines responsibilities and aligns sectoral strategies to ensure coherent implementation and monitoring.
- Developing targeted public information campaigns and education programmes that actively involve consumers, SMEs, and local authorities. These campaigns should highlight

behavioural changes, practical measures, economic benefits, and environmental impacts related to food waste reduction.

- Institutionalising stakeholder participation through a permanent national advisory council composed of representatives from key sectors (public institutions, private companies, NGOs, academia, consumer associations). This body would enhance transparency, provide continuous feedback, and support effective policy formulation and review.

To increase the effectiveness of Croatia's food waste prevention policy and ensure sustainable progress towards the targets, based on all previous observations of Croatia's national legislation, the following key actions are recommended:

1. Initiate systematic measurement of food waste and public reporting for large retailers, catering businesses, large caterers, and public institutions. Data should be disaggregated by sector and integrated into national tracking systems.
2. Strengthen enforcement and monitoring of food donation by providing clearer responsibilities, dedicated resources, and logistical support for redistribution programmes to maximise the reuse of surplus food and minimise bureaucracy.
3. Offer tax incentives (e.g., VAT exemptions, tax deductions, or reduced tariffs) to encourage businesses — especially SMEs and retail chains — to actively participate in food donation programmes and circular economy initiatives.
4. Establish a permanent cross-sectoral coordination mechanism (inter-ministerial working group or national advisory body) involving the Ministries of Agriculture and the Ministry of Environment, possibly other ministries, and representatives of local authorities and civil society to ensure policy coherence, efficient implementation, and accountability.
5. Digitise and fully integrate existing food donation platforms with national monitoring databases to enable real-time tracking of food redistribution activities, greater transparency, improved logistical efficiency, and accurate policy impact assessment.

6. Expand and deepen public awareness campaigns and educational initiatives specifically targeting consumer households, SMEs, schools, and local communities. Educational content should highlight economic, environmental, and social benefits and provide practical guidance to promote lasting behavioural change.

7. Institutionalise stakeholder engagement and consultation by establishing a permanent National Food Waste Prevention Advisory Council made up of experts from academia, the private sector, non-governmental organisations, consumer groups, and local authorities. The council should regularly review policy progress, identify emerging barriers, and propose timely adjustments and improvements.

The overarching goal of these measures is to transform the Croatian approach from fragmented, voluntary practices into a comprehensive, results-oriented national strategy that is aligned with EU standards and international sustainability objectives.

POLICY ON FOOD WASTE PREVENTION AND MANAGEMENT ON THE REGIONAL LEVEL

4.1. Region of Abruzzo, Italy

Abruzzo complies with Italian national legislation while developing region-specific strategies and regulations to address local food waste challenges. The Abruzzo Region has developed a regulatory framework for food waste prevention that aligns with national and EU policies, while incorporating region-specific strategies and initiatives.

At the core of Abruzzo's regulatory framework is the implementation of national laws and the transposition of EU directives such as the Waste Framework Directive and the Circular Economy Action Plan. Additionally, the region complies with Law No. 166/2016 (Gadda Law), which, as previously mentioned, facilitates food donation and surplus redistribution by simplifying bureaucratic procedures and offering tax incentives to businesses that donate food instead of discarding it.

In addition to transposing national legislation, Abruzzo has introduced regional laws specifically aimed at food waste prevention (Table 5). The Legislative Act 12 No. 4 (2016) plays a crucial role in combating food waste by promoting the recovery and redistribution of surplus food and non-food items to vulnerable populations. This act establishes a structured system that connects food providers with local governments, volunteer organisations, food producers, distributors, and consumers to ensure surplus food reaches those in need. Another key regulatory instrument is the Integrated Waste Management Regional Plan (2018, updated in 2020), which integrates food waste reduction within broader sustainability objectives. The plan promotes organic waste minimisation through composting and sustainable waste management practices, thereby contributing to broader food waste reduction efforts within the region. While not directly addressing food waste, the Legislative Act No. 23 (2018) on trade regulation also plays a role. By ensuring compliance with competition laws, coordinating trade policies, and enhancing transparency in the food

market, this law indirectly impacts food distribution and surplus management. Additionally, the Legislative Act No. 6 (2001, updated in 2007) prohibits genetically modified organisms (GMOs) in public canteens (schools, hospitals, and public facilities), ensuring a sustainable and safe food supply chain. Although not specifically focused on food waste, such measures promote responsible food sourcing in public institutions.

Table 5: Regional Legislative and Strategic Acts Review - Abruzzo

Document Type	Title	Objective	Implications for Food Waste Prevention	Affected Sectors / Stakeholders	Competent Authority	Regional Adaptation / Measures
Legislative Act	Regional Act No. 6 (2001) Regulations on the cultivation, farming, experimentation, and commercialization of genetically modified organisms (GMOs) and products derived from them.	Prohibition of GMO products in schools, hospitals, and public canteens, with suppliers required to provide declarations.	It prohibits the serving of GMO products in schools, hospitals, and public canteens, with a requirement for suppliers to provide declarations. While it does not directly address waste, it contributes to ensuring food safety and promoting sustainable supply chains.	Food suppliers, public entities, consumers.	Abruzzo Region	Implemented and Updated in 2007 (Regional Act No, 26)
Legislative Act	Fighting Food Waste Regional Act 12 No. 4 (2016)	Combat food waste by promoting the recovery and distribution of surplus food and non-food items .	Promotion of the recovery and distribution of food and non-food surpluses. -Support for the most vulnerable segments of the population (people in poverty or severe social distress).	Local governments, volunteer organizations, food producers/distributors, consumers, and individuals in need.	Abruzzo Region	Implemented
Legislative Act	Consolidated text on trade Regional Act No. 23 (2018)	Ensure compliance with competition and liberalization laws. Guiding and coordinating trade policies within European and national frameworks. Enhancing consumer benefits and market quality. Integrating commercial activities into the regional urban landscape. Promoting the development of small and medium-sized enterprises. Encouraging transparency and coordination among authorities.	This law primarily governs trade, emphasizing distribution planning, consumer protection, and the promotion of local businesses. While it does not directly address food waste reduction, it may have an indirect impact on food management through the regulation of food service and sales activities.	Commercial operators, municipalities and chambers of commerce, small and medium-sized commercial enterprises, consumers.	Abruzzo Region	Implemented

Project	*DEMETRA* Project (2016)	Raise awareness about household food waste and water resources. Measuring waste levels in households. Mapping solidarity initiatives for surplus recovery. Developing protocols for food safety in donations. Providing recommendations for anti-waste policies.	It involves measuring household waste, mapping solidarity initiatives, and developing protocols for food donation safety.	Families, agri-food businesses, policy makers, consumers, vulnerable workers, marginal farming businesses, researchers/institutions, Southern Italian businesses	IZSAM – The Experimental Zooprophylactic Institute of Abruzzo and Molise G. Caporale, funded by the Ministry of Health (2015).	Completed
Strategic / Planning Act	Integrated Waste Management Regional Plan (2018)	Aim to optimize waste management processes and promote waste reduction strategies	Emphasizes the reduction of organic waste, including food waste, through composting and other sustainable practices.	Waste management sector, municipalities, agricultural sector, consumers	Abruzzo Region	Implemented and Updated in 2020
Project	Se mi lasci non vale Project (2020)	Raise awareness on waste management, Sustainable Development (Agenda 2030), climate change and circular economy through activities aimed at reaching different segments of population/ private and private entities.	It provides guidelines and best practices to help consumers minimise food waste.	Consumers, educational institutions, non-profit organizations	CDCA Abruzzo (CDCA – Centro di Documentazione sui Conflitti Ambientali Onlus)	Completed
Awareness Campaign	Campagna *BIS!* (2022)	Raise awareness about the value of food, encouraging restaurant customers to take home their leftovers, thus contributing to the reduction of food waste.	Reduces food waste by promoting the use of food bags in commercial restaurants.	Restaurant customers, restaurants and food businesses, local authorities and municipalities, the general public	Anci (National Association of Municipalities), Mite (Ministry of Ecological Transition)	Completed

Abruzzo has implemented specific initiatives to reduce food waste in farming and food production. For instance, the Innopaq Project (2019) focuses on developing biostimulants for sustainable agriculture, which increase crop yields and enhance nutritional value while reducing post-harvest losses.

Various projects and campaigns have been launched to engage consumers, businesses, and institutions:

★ The *DEMETRA* Project (2016) focused on measuring household food waste, mapping solidarity initiatives, and developing protocols for food donation safety. It also provided recommendations for anti-waste policies and awareness campaigns.

★ The *Se mi lasci non vale* Project (2020) promoted waste reduction, climate change awareness, and circular economy principles by educating schools, non-profits, and the general public on best practices to minimise food waste.

★ The *BIS!* campaign, launched in 2022 by ANCI (the National Association of Italian Municipalities) and the MiTE (Ministry of Ecological Transition), aims to minimise food waste by encouraging the use of takeaway bags in restaurants. Its primary goal is to highlight the importance of valuing food while motivating diners to take leftovers home, thereby reducing waste. The initiative provides restaurants with informational materials and starter kits, including approximately 200 takeaway containers for the first 250 participating establishments. In Abruzzo, ANCI's regional branch has actively promoted the campaign, encouraging local restaurateurs to participate and raising community awareness about the significance of sustainable, waste-reducing practices.

4.1.1. Key Observations and Policy Implications: Region Abruzzo

Abruzzo follows national legislation and EU directives closely, especially the Waste Framework Directive, the Circular Economy Action Plan, and the Gadda Law on food donations. The regional approach builds on these by adding local strategies and support measures. The region has its own laws to tackle food waste. The most significant is the Regional Act No. 4/2016, which creates a network to recover and redistribute surplus food

to vulnerable groups. The Integrated Waste Management Plan (2018, updated 2020) also includes measures for food waste prevention, particularly through composting and better organic waste management. Other policies, while not directly focused on food waste, help create a better environment for prevention. For example, the Regional Act No. 23/2018 on trade improves transparency in the food market, while the ban on GMOs in public canteens (Regional Act No. 6/2001) supports sustainable food supply chains. Abruzzo has also invested in several projects to educate the public and businesses: *DEMETRA* measured household waste and mapped donation networks, *Se mi lasci non vale* promoted circular economy principles, and *BIS!* encouraged restaurants to offer takeaway bags for leftovers. Abruzzo also addresses food waste before it reaches the market. Projects like Innopaq (2019) help farmers improve yields and reduce post-harvest losses.

While the legal and strategic foundation is strong, a consistent system for measuring the actual reduction and redistribution of food waste is still lacking. Improved data collection would help target future efforts. Partnerships with municipalities, NGOs, food businesses, and the hospitality sector are functioning, but could be expanded to improve collection, logistics, and redistribution of surplus food. Campaigns have raised public awareness, but turning this into long-term behavioural change will require ongoing education — especially for households and restaurants — alongside incentives to encourage good practices.

4.1.2. Key Recommendations: Region Abruzzo

Shift from Redistribution to Prevention

- Introducing financial incentives for businesses that implement waste prevention strategies, such as improved inventory management and optimised portioning.
- Encouraging dynamic pricing models to sell products approaching their expiration date at a discount, reducing unsold stock.

- Support the development of local markets for imperfect produce, preventing unnecessary disposal due to cosmetic standards.
- Strengthen public–private partnerships to develop food waste prevention campaigns targeting businesses and consumers.

Improving Stakeholder Engagement and Awareness

- Expanding food waste education programmes in schools, universities, and public campaigns to foster a culture of prevention.
- Establishing regional awareness initiatives that emphasise responsible consumption and effective home food storage techniques.
- Encouraging large retailers and food producers to voluntarily report their food waste data, fostering transparency and accountability.

Streamlining Food Donation Processes

- Simplifying bureaucratic procedures related to food donation, ensuring that businesses can easily participate.
- Strengthening tax incentives for food donations, making redistribution more economically viable.
- Developing a regional food donation platform that directly connects businesses with charities and food banks.

Implementing a Standardised Food Waste Monitoring System

- Introducing a regional tracking system to measure food waste at all stages of the supply chain.
- Encouraging businesses to set voluntary waste reduction targets based on current waste data.
- Using data-driven insights to tailor future policies and allocate resources efficiently.

4.2. Region of Veneto, Italy

Like Abruzzo, the Veneto Region complies with Italian national legislation but has also developed regional strategies and regulations to address local food waste challenges. The Veneto Region has established a regulatory framework for food waste prevention that aligns with both national and EU policies while incorporating region-specific strategies and

initiatives. Beyond the transposition of national legislation, Veneto has introduced regional laws specifically targeting food waste prevention (Table 6).

The Veneto Region has developed a region-specific framework for food waste prevention that aligns with both national directives and local priorities. The region's legal foundation is anchored in Regional Law No. 40 (2003), which promotes interventions in agriculture and the development of food districts, and was later strengthened by Regional Law No. 20 (2023). These laws encourage local partnerships among governments, businesses, and non-profits to tackle food waste collaboratively. Additionally, the Veneto Waste Management Plan includes targeted actions to reduce organic waste through prevention measures and improved separate collection systems.

Strategically, the Veneto Region emphasises innovation, redistribution, and collaboration. The *Food4All* project focuses on redistributing surplus food to vulnerable populations, while collaborations with universities and research institutions drive innovation in food waste solutions. The region also supports social enterprises involved in food recovery and redistribution.

A notable initiative is the Memorandum of Understanding signed by the Veneto Region and local environmental and academic institutions aiming to promote the circular economy within regional production sectors. This partnership fosters coordinated strategies and operational proposals to embed circular practices across industries, reinforcing Veneto's commitment to sustainable food systems and waste reduction.

Table 6: Regional Legislative and Strategic Acts Review - Veneto

Document Type	Title	Objective	Implications for Food Waste Prevention	Affected Sectors/Stakeholders	Competent Authority	Regional Adaptation/Measures /Initiatives	Gaps and Challenges
Legislative Act	Regional Law No. 40 of December 12, 2003	Enhance interventions in agriculture and food districts.	Promotes agricultural sustainability and food waste reduction in districts.	Agriculture, food districts	Regional Council	Adoption of measures to enhance food districts and promote sustainable food production.	Lack of concrete food waste reduction targets. Monitoring and impact assessment mechanisms are weak.
Legislative Act	Regional Law August 4, 2023, No. 20 (BUR No. 104/2023)	Amendments to Regional Law No. 40 to enhance food districts.	Strengthens food waste prevention initiatives and agricultural support.	Agriculture, local governments	Regional Council	Enhances initiatives for food districts and implements measures to reduce agricultural waste.	Limited integration with circular economy principles. Lack of dedicated financial support for food waste prevention projects.
Legislative Act	Waste Management Plan (Piano Rifiuti Veneto)	Reduce organic waste through prevention and separate collection systems.	Implements measures to reduce food waste and enhance organic waste management.	Local municipalities, waste management	Regional Council	Focuses on organic waste reduction through targeted measures and improved separate collection systems for food waste.	Focus remains on waste management rather than upstream prevention. Lack of enforcement measures for waste reduction at the source.
Strategic/Planning Acts	*Food4All* Project	Redistribute surplus food to those in need.	Aims to reduce food waste by redistributing surplus food.	Local municipalities, social enterprises	N/A	Regional initiative focused on food redistribution and social inclusion.	Dependent on voluntary participation and short-term funding. Need for long-term sustainability strategies.
Strategic/Planning Acts	Support for Social Enterprises	Encourage food waste reduction and redistribution via social enterprises.	Supports social enterprises working to recover and redistribute surplus food.	Social enterprises, NGOs	N/A	Funding and policy support for social enterprises involved in food waste recovery and redistribution.	Limited financial incentives for businesses to engage in food recovery. Insufficient collaboration between the private sector and social enterprises.
Strategic/Planning Acts	Collaboration with Universities and Research Institutions	Research projects focused on innovative solutions for food waste management.	Develops and tests innovative food waste prevention and management methods.	Universities, research institutions	N/A	Collaborative research projects targeting regional food waste challenges, including food waste valorisation and circular economy solutions.	Lack of practical application and technology transfer to industries. Need for stronger links between research and policy implementation.

4.2.1. Key Observations and Policy Implications: Region Veneto

Regional food waste prevention efforts in Veneto face several structural challenges. A limited focus on prevention means most actions prioritise managing waste (e.g., organic treatment) rather than addressing it at the source. Stronger emphasis is needed on prevention strategies, such as optimizing supply chains and educating consumers.

There is also a lack of enforcement and monitoring, as many policies rely on voluntary efforts, resulting in uneven implementation and limited data. Introducing mandatory food waste reporting with measurable targets at the regional level would enhance accountability. Short-term funding from regional or EU grants undermines long-term planning, highlighting the need for permanent financial support for prevention and redistribution projects. In addition, private sector engagement remains limited due to the absence of incentives. Offering tax benefits or financial rewards for surplus food donations could help address this. Finally, regional policies often display weak integration with circular economy objectives. Strengthening this alignment by promoting food waste valorisation — such as turning waste into animal feed, compost, or bioplastics — would enhance sustainability and resource efficiency.

4.2.2. Key Recommendations: Region Veneto

1. Stronger emphasis on food waste prevention strategies, including supply chain optimisation and consumer education programmes. These actions would improve efficiency, reduce costs for businesses, and foster a culture of responsible consumption. On the supply chain side, the region could promote the use of digital platforms to match supply and demand more effectively, reduce inefficiencies in transport and storage, and support producers and retailers in adopting advanced forecasting tools. On the consumer side, educational programmes should target schools, households, and hospitality businesses,

raising awareness of portion planning, expiry date interpretation, and sustainable consumption practices.

2. Introducing mandatory reporting on food waste at the regional level, with clear targets and indicators, to provide robust evidence to guide policy, enhance accountability, and align Veneto with EU-wide food waste reduction commitments. This system should:

- require businesses across the food chain (producers, processors, retailers, food services) to measure and report food waste volumes annually;
- define standardised indicators aligned with EU methodologies, ensuring comparability across sectors;
- set progressive reduction targets (e.g., -30% by 2030, in line with the EU Farm to Fork Strategy);
- ensure data transparency through a regional monitoring platform accessible to policymakers, businesses, and citizens.

3. Establishing permanent funding mechanisms for food waste prevention and redistribution projects, to enable organisations to plan strategically, scale up successful pilots, and create systemic impact rather than isolated short-term outcomes. This would be effective in cases that there would be:

- a dedicated regional fund, financed through regional budgets and matched by EU cohesion or recovery funds, and;
- long-term support for food banks and charities, ensuring stable resources to collect, store, and distribute surplus food.

4. Introducing tax breaks or financial incentives for businesses that donate surplus food. Policy measures could include: tax credits or deductions for companies that donate edible surplus food to charities; reduced waste management fees for businesses that demonstrate

food waste reduction or donation activities; simpler administrative procedures to encourage donation, including streamlined health and safety protocols for redistributing surplus food.

5. Developing regional strategies that promote food waste valorisation, such as upcycling waste into new products by expanding composting infrastructure to transform organic waste into fertilisers for local agriculture. Another boost would be given by promoting collaborations between farmers, processors, and technology providers to upcycle waste into animal feed or new food products.

4.3. Region of Apulia, Italy

In line with the European context and national legislation and initiatives in combating food waste, the Apulia Region follows an integrated and circular approach, as summarised in Table 7. The regional strategy builds upon the principles of:

- circular economy,
- shared responsibility,
- social inclusion,
- education on conscious consumption and,
- fight against food poverty.

Table 7: Regional Integrated and Circular Approach Against Food Waste - Apulia

Level of Intervention	Action	Objective
Media & Communication	Outreach campaigns: - *Il giusto è meglio*; *Iospreco Zero*	Changing awareness and habits on food waste management
Training & Capacity building	Workshop, events for local governments administrators, and citizens	Sharing best practices locally applicable for reducing food waste
School education	Projects and workshops carried out in educational and training institutions	To build awareness and educating new generations on food waste reduction
Practical support	Funding and agreements with companies, NGOs and food banks	To recover and redistribute food

Level of Intervention	Action	Objective
Integrated networks	NGOs + food producers and retailer companies + institutions	Implementing circular economy, corporate social responsibility and social inclusion actions by all the stakeholders in reducing food waste.

Apulia has joined the Charter for a Zero Waste, based on the European Resolution for avoiding food wastage (19 January 2012) and fostering actions aimed at reducing it.

Whitin this context, the main pillar could be represented by the regional law N°. 13/2017 which promotes "recovery and reuse of surpluses, food waste, and pharmaceutical products". This law provides financial support made available by the regional authority to promote initiatives concerning the distribution of surpluses in order to protect socially disadvantaged groups, or, in any case, initiatives aimed at preventing such surpluses from turning into waste, thereby minimizing food poverty.

For the period 2021–2023, a total of €600,000.00 was made available, and for 2025–2026 additional €875,000.00 will be added to fund projects aimed at combating food wastage and ensuring food supply for people in difficulty. The main objectives of this law can be summarised as follows:

- Strengthen existing networks for reducing food and pharmaceutical waste through logistical, communication, and educational support, as well as by enhancing solidarity initiatives for emergency social interventions and poverty reduction;
- Improve the effectiveness and timeliness of assistance to people in need by recovering and donating surplus food products (no longer marketable but still edible) to charitable organisations;
- Promote responsible consumption and innovative forms of surplus food sharing (e.g., food sharing) to foster a culture of waste reduction;

- Encourage proximity-based collaborations (“at zero km”) between food sector operators (donor entities) and recipient organisations, as defined by Article 2 of Law No. 166/2016;
- Support the proper use and recovery of non-expired medicines with at least 8 months of remaining shelf life, properly stored in their original, intact packaging (excluding medicines requiring controlled temperature storage, hospital-use medicines —class H — and those classified as narcotic or psychotropic substances), through the regional pharmacy network and general practitioners, as well as initiatives for social innovation supporting the solidarity network for emergency social intervention and poverty alleviation;
- Promote the proportional reduction of the quantities of waste produced and, consequently, the related economic, social, and environmental disposal costs, with reference to both food products and pharmaceutical products;
- Assist local administrations in assessing the feasibility of introducing incentive mechanisms (including, by way of example, the reduction of municipal waste disposal fees or other local taxes and charges) in favour of economic operators who donate their surpluses instead of disposing of them as waste, and who collaborate in promoting the principles of responsible consumption and waste reduction;
- Promote communication, information, awareness-raising, and educational campaigns on the importance of reducing food and pharmaceutical waste;
- Contribute to the creation of a regional database of best practices and a network for disseminating good practices, with specific reference to those that are transferable and capable of expanding their scale and impact over a broader territorial area.

Regarding the outreach campaigns addressed to enhance awareness on the importance of reducing food waste, Apulia recently supported initiatives such as:

A) *Il giusto è meglio. Per te, per l'ambiente, per la Puglia* that was launched from 9 December 2024 to 5 February 2025, targeting citizens, students, large-scale retailers (GDO), farmers' markets (Km0), and the catering sector. The aim was to promote the importance of:

- shopping planning,
- proper food storage,
- creative reuse of leftovers, and
- consumption of seasonal products,

B) *IOSPRECO ZERO! / Spreco Zero*. A campaign launched in May 2025, involving the municipalities of Monopoli, Conversano, and Polignano a Mare. The initiative included workshops for local administrators and the sharing of best practices against food waste.

Apulia has launched several funding schemes and calls for proposal::

1. RiCibiamo 2.0 – funded with €50,000 to recover products from food supply chains and distribute them free of charge to people living in poverty (Ambito Sociale 5, Municipalities of Capurso and the metropolitan area);
2. NGOs Call for Proposals (2025–2026) – with a budget of €875,000 (€700,000 in 2025 and €175,000 in 2026) to support networks and integrated projects that recover surplus food and pharmaceutical products (in accordance with the Regional Law No. 13/2017), involving associations, local authorities, producers, and distributors.

Apulia also supports training and education on food sustainability in schools;:

- A three-year programme (2024–2026) promoting school projects on environmental and food education (Mediterranean diet, disease prevention), with funding for workshops, conferences, and laboratories: 2025 call for proposals with a budget of €300,000.
- The organisation of meetings in schools by the Banco Alimentare della Daunia, during the 12th National Day for the Prevention of Food Waste (February 5, 2025). In particular, the events involved the cities of the province of Foggia with the aim of raising awareness among students, teachers, and families, followed by an activity of internal collections of food for donation and redistribution.

Finally, as far as the NGOs' collaborations and actions for solidarity logistics, the Apulia:

- closely collaborates with the Banco Alimentare della Daunia in collecting surpluses from agricultural production, food industry, large-scale retail, and catering, to distribute food to charitable organisations (over 409 tonnes recovered in 2024);
- supports trade fair contexts (such as Gate&Gusto held in Foggia in March 2025), the agreements among stakeholders for allowing donation of unsold food products to charitable organisations.

4.3.1. Key Observations and Policy Implications: Region Apulia

Apulia's efforts to combat food waste are primarily focused on facilitating food donations and strengthening stakeholder networks. The aim is principally addressed to reinforce a vertical integration of the supply chain in order to avoid food waste production during all the phases of food production and distribution. On the other hand, collaboration with NGOs and charitable organisations is considered a crucial issue in reducing food waste at the consumer level. As for the latter, a simplification of regional regulations seems to be a priority for local policies. In line with European and national frameworks, streamlined procedures for food donations—combined with fiscal incentives for companies that donate surplus or unsold food—could greatly enhance participation from the private sector.

Such measures would not only support the transition towards a circular economy but also strengthen alignment with sustainable development principles and the UN 2030 Agenda for Sustainable Development Goals (SDGs). Ensuring that regulatory, fiscal, and operational mechanisms are coherent and business-friendly will be essential to scaling up Apulia's food waste prevention impact.

4.3.2. Key recommendations: Region Apulia

1. Enhance awareness of the importance of food reduction among all stakeholders.

2. Strenghten vertical integration along the overall supply chain of food production and distribution.
3. Implement tax benefits and financial incentives for companies operating in the food production and distribution by donating unsold food and surplus.
4. Simplify rules and regional laws for donating unsold food and surplus.
5. Enhance the collaboration between companies, NGOs, and charitable organisations.

4.4. Regional level in Croatia: Primorje-Gorski Kotar County, Karlovac County, Zadar County, Lika-Senj County

At the regional and local levels in Croatia, the implementation of national food waste policies is highly dependent on contextualisation and reflects different administrative capacities, resource availability, and strategic priorities. While all regional frameworks are broadly aligned with the national Waste Management Plan and the EU legal framework, significant differences exist in terms of specificity, focus, and effectiveness in preventing food waste. Unlike in Italy, where regions have enacted binding legislation on food waste, no such regional laws exist in Croatia. As illustrated in Table 8, regional policy instruments consist mainly of strategic or planning documents and implementation reports, without normative legal instruments. Most regional approaches to food waste management typically integrate food waste into broader biowaste or municipal waste management strategies. These approaches emphasise the separation of waste at source, composting infrastructure, education campaigns for households, and the improvement of recycling. However, explicit measures to prevent food waste, redistribute surpluses, or sector-specific reduction are limited or absent.

Reports from municipalities such as Novalja and Rijeka highlight ongoing efforts to raise public awareness, distribute compost bins, and improve infrastructure. Nevertheless, these implementation reports typically lack precise quantitative targets, specific monitoring

mechanisms, or indicators that specifically track food waste streams. As a result, data remain fragmented and insufficient for meaningful policy evaluation. Strategic documents —such as the waste management plans of Zadar, Karlovac, and Gospić, and the development plans for Lika-Senj County — emphasise sustainable waste management through integrated infrastructure development and general environmental protection. However, the specific problem of food waste is usually addressed indirectly within the general bio-waste or environmental sustainability plans. Explicit frameworks for food donation and co-operation mechanisms with the retail and hospitality sectors are rarely formulated or implemented. Still, there are notable innovations such as Rijeka's Urban Food Action Plan as part of the EU-funded *FUSILLI* project (Eika and 12 *FUSILLI Food Living Labs*, 2023). This initiative is a collaborative, community-driven model that integrates behaviour change tools, digital applications, and cross-sector stakeholder engagement. However, the effectiveness of such initiatives remains dependent on voluntary adoption, community engagement, and local government support, indicating gaps in enforcement mechanisms and incentive structures. Based on the strategic and other documents presented in Table 8, it can be concluded that Croatia has not developed a sufficiently strong and coherent legal framework to effectively address the problem of food waste and its prevention. Unlike some EU Member States, such as Italy, which have authorised their regions to enact specific legislation for food waste prevention, the Croatian system relies solely on the national legal framework without granting the power to develop binding regulations at the regional level. Consequently, regional and local authorities in Croatia work mainly with strategic documents and voluntary guidelines, leading to fragmented implementation and a lack of coordinated approaches. This situation hinders the institutionalisation of food waste reduction targets and the long-term alignment with the circular economy and the European Union's sustainability policy. It is important to mention that common challenges at the regional level include insufficient disaggregation of food waste data, lack of binding and measurable targets, limited cross-sector cooperation, insufficient infrastructure for redistribution of surpluses, and minimal

economic incentives for private sector engagement. To overcome these barriers, coordinated regional policy action that explicitly prioritises food waste, is required.

Table 8: Regional Legislative and Strategic Acts Review

Document Type	Title	Objective	Implications for Food Waste Prevention	Affected Sectors/Stakeholders	Competent Authority	Regional Adaptation/Measures/Initiatives	Gaps and Challenges
Implementation Report	Report on the Implementation of the Waste Management Plan of the Republic of Croatia in Primorje-Gorski Kotar County (2023) Available at: https://www2.pgz.hr/doc/graditeljstvo/2024/IZVJESCE-OTPAD-2024.pdf	Ensure implementation and monitoring of waste management objectives from the national plan (2017–2022) at the county level.	Promotes food waste prevention via bio-waste separation, household composting, awareness campaigns, and improved collection infrastructure.	Local municipalities (36), waste management utilities (12), county coordination body (Ekoplus d.o.o.), Ministry of Economy and Sustainable Development	Primorje-Gorski Kotar County	Expansion of composting, waste management infrastructure, and public awareness through education and treatment facilities.	Missing food waste targets and indicators, poor data granularity, no food donation mechanisms, and fragmented monitoring across municipalities.
Strategic / Planning Act	Waste Management Plan of Zadar County Available at: https://sredisnjikatalogrh.gov.hr/sredisnji-katalog/dokumenti-i-publikacije/detalji?searchTerm=filterfi%255B12086%255D%3D269539&id=2757385	Develop a regional waste management system aligned with the national strategy and EU legislation to reduce waste generation, improve treatment and disposal, and ensure environmental protection.	Encourages food waste prevention through source avoidance, awareness, and composting infrastructure.	Local governments, utility companies, households, regional coordination bodies, educational institutions	Zadar County Assembly / Department for Environmental Protection	Development of regional waste infrastructure, composting systems, public education, and landfill closure measures.	No food waste targets or KPIs (Key Performance Indicators), weak biowaste monitoring, lack of donation systems and private sector cooperation, and reliance on unimplemented infrastructure.
Strategic / Planning Act	Waste Management Plan of Karlovac County (2008) Available at: https://www.kazup.hr/images/dokumenti/graditeljstvo/planski_poslovi_zastita_okolisa/vazni_dokumenti/PGOKAZUP.pdf	Establish an integrated and sustainable waste management system aligned with the national waste strategy and EU directives.	Contributes to food waste prevention through source reduction, biowaste separation and composting, infrastructure planning, and public education.	Local governments, households, utility companies, businesses, education sector	Department for Spatial Planning, Construction and Environmental Protection – Karlovac County	Integrated waste management planning through forecasting, composting, infrastructure development, landfill rehabilitation, and public education.	No focus on edible food waste or donation; food waste not separately tracked; lacks targets and monitoring; outdated and misaligned with current EU priorities.
Implementation Report	Annual Implementation Report of the Development Plan of Karlovac County 2021–2027 (2023) Available at: https://www.kazup.hr/images/dokumenti/Zupanijska_skupstina/MANDAT_2025-2029/2_sjednica_ZS_206_2025/7_2_-_Godi%C5%A1nje_izvje	Monitor progress on strategic objectives and indicators across all sectors to promote sustainable regional development.	Supports food waste prevention indirectly via circular economy promotion, household waste separation, and education under environmental sustainability goals.	County institutions, municipalities, public utility companies, households, civil society	Karlovac County / County Development Coordination Body	Promotion of circularity through improved waste separation, education, protected area planning, and alignment with national waste strategy.	No direct food waste indicators or measures; food waste not distinguished in reporting; lacks actions on donation and edible food loss; focus remains on waste treatment over prevention.

	%C5%A1%C4%87e_o_provedbi_Plana_razvoja_Karlova%C4%8Dke_%C5%BEupanije_za_2024.pdf						
Implementation Report	Annual Report on the Implementation of the Waste Management Plan of the Republic of Croatia – City of Novalja (2023) Available at: https://licko-senjska.hr/images/uploads/Izvjesce_PGO.pdf	Monitor compliance with national waste management policy and objectives at the local level.	Supports food waste prevention via composting, bio-waste separation, education, and data monitoring.	Local government (City of Novalja), public utility company Arburoža d.o.o., households, hospitality businesses, educational institutions	City of Novalja	Implementation of home composting, systematic waste separation, recycling infrastructure, and public education initiatives.	Absence of quantitative targets and KPIs for food waste reduction, weak monitoring, no structured donation system, and delays in biowaste treatment infrastructure.
Strategic / Planning Act	Waste Management Plan of the City of Gospić (2017–2022) Available at: https://www.gospic.hr/images/stories/PDF_SVASTA/PDF_UPLOAD/Plana%20gospodarenja%20otpadom%20Grada%20Gospi%C4%87a%20za%20razdoblje%202017.-2022..pdf	Develop a sustainable, integrated waste management system aligned with national and EU policies.	Addresses food waste indirectly through source prevention, bio-waste separation and composting, biodegradable waste reduction, and outreach activities.	City of Gospić, Komunalac Gospić d.o.o., households, local institutions, NGOs	City of Gospić	Enhancement of bio-waste separation, recycling infrastructure, education, composting plans, and monitoring systems.	No mention of edible food waste; donation systems not addressed; biowaste not disaggregated; lacks specific indicators or targets for food waste prevention.
Strategic / Planning Act	Development Plan of Lika-Senj County until 2027 with Territorial Strategy Available at: https://licko-senjska.hr/images/uploads/3215/plan_razvoja_lsz_do_2027._s_ts_i_,_verzija_listopad_2024.pdf	Promote balanced sustainable development across the county by strengthening competitiveness, sustainability, and quality of life.	Food waste prevention indirectly supported through green economy, circular resource use, and environmental protection goals.	County administration, local governments, agricultural and food producers, SMEs, public institutions, citizens	Lika-Senj County / Regional Development Department and LIRA – County Development Agency	Support for sustainable agriculture, rural food systems, green technologies, and environmental education and infrastructure.	No mention of food waste; lacks targets, indicators, and monitoring; no alignment with national or EU frameworks; food donation and data tracking opportunities unaddressed.

4.4.1. Key Observations and Policy Implications: regions in Croatia

Regional policies in Croatia generally integrate food waste prevention into broader waste management plans and emphasises composting, bio-waste separation, and public education rather than explicit food waste reduction strategies. Food waste tends to be embedded within wider waste categories and thus lacks specific treatment, measurement, and targeted policy mechanisms.

Few regions have created an explicit framework for food donation or actively engaged the retail and hospitality sectors in systematic surplus redistribution programmes. There are also a few measurable targets, limited structured monitoring, and an absence of comprehensive data collection systems that specifically address food waste.

Promising practices — such as the collaborative approach in Rijeka — offer valuable insights into potential models for replication. However, their effectiveness remains limited due to a absence of legal obligations, reliance on voluntary participation, and insufficient infrastructural and financial support.

To strengthen regional governance of food waste prevention in Croatia, it is important to develop and implement dedicatedregional food waste prevention action plans that include clearly defined targets, implementation deadlines, and measurable performance indicators. These plans should provide a structured framework for monitoring progress and ensuring accountability at both county and municipal levels.

Effective policy implementation requires the promotion of robust local partnerships between municipalities, public utilities, food banks, and NGOs. Such collaborations can significantly improve the coordination and efficiency of surplus food redistribution systems and compensate for local capacity constraints. In addition, targeted investment in regional infrastructure — such as cold storage, logistics networks, and redistribution centres — is needed to support large-scale and consistent food donation campaigns.

Scaling up successful community-led models like Rijeka's can provide replicable approaches for both urban and rural contexts. These models show how local experimentation combined with stakeholder engagement can generate context-specific solutions and attract EU funding. In parallel, food waste prevention needs to be integrated into education systems, with awareness-raising programmes in schools, community organisations, and businesses to ensure long-term behavioural change.

To support data-driven policymaking, regional and local authorities should be required to itemise and transparently report food waste as part of a wider bio-waste management system. This would enable benchmarking, facilitate learning between regions, and improve planning accuracy. Finally, establishing dedicated regional innovation funds is crucial for funding pilot projects that promote food waste prevention, circular economy practices, and community engagement. Collectively, these measures offer a pathway to more resilient, sustainable, and inclusive regional food systems.

4.4.2. Key Recommendations: Regions in Croatia

Regional food waste management in Croatia offers both significant opportunities and clear gaps that need to be addressed. Notable opportunities include emerging community-led initiatives such as the *FUSILLI* project in Rijeka, which demonstrates the potential of integrating citizen participation, digital tools, and stakeholder collaboration into food waste strategies. These local innovations, if properly supported and scaled up, offer replicable models for wider regional application across Croatia.

However, there are still significant gaps in individual regions. A recurring problem is the absence of clearly defined targets and KPIs for food waste. Current regional strategies often subsume food waste in more general categories, which reduces the visibility and prioritisation of specific measures to prevent food waste. Monitoring systems to track food

waste streams are underdeveloped or non-existent, severely limiting the ability to evaluate strategies or effectively measure progress.

Most regional and municipal strategies lack structured mechanisms for the redistribution of surplus food, with limited cooperation between local authorities, private companies, and non-governmental organisations (NGOs). Economic incentives to encourage food donation or sector-specific engagement, particularly from the retail and hospitality sectors, remain minimal or non-existent. In addition, the existing infrastructure for food redistribution (such as cold storage and transport logistics) is often inadequate, further hindering the effective implementation of surplus food reuse initiatives.

A fundamental structural limitation is the lack of a legal or regulatory framework for the prevention of food waste at the regional level. Unlike Italian regions such as Abruzzo and Veneto — which have enacted region-specific laws requiring food donation, measurement, and monitoring — Croatian regions lack legally binding instruments that would allow regional authorities to take systematic and enforceable action. The reliance on voluntary measures and fragmented planning significantly reduces policy coherence and hinders the long-term institutionalisation of food waste prevention targets. To effectively address these gaps and capitalise on existing opportunities, regional authorities should prioritise the following strategic actions:

- create explicit regional food waste prevention plans with clear quantitative targets, timelines, and measurable KPIs;
- strengthen partnerships at the local level between municipalities, waste management companies, private companies, food banks, and NGOs to promote integrated systems for the redistribution of surplus food;
- invest in necessary infrastructure improvements, including specialised facilities for the storage, handling, and transport of surplus food to enable efficient redistribution;
- commit to separate collection and reporting of food waste as part of regional and municipal waste management to improve data granularity and monitoring;

- provide fiscal incentives and regulatory support to encourage private sector participation in surplus food donation and circular economy practices;
- expand targeted education and outreach campaigns that explicitly focus on food waste prevention and responsible consumer behaviour in communities, schools, and businesses;
- develop and promote regional projects such as the *FUSILLI* project in Rijeka to promote sustainable food system change and circular economy solutions;
- develop a regional legal framework for food waste prevention that is tailored to the specific needs of the region in line with national authorities and legislation.

4.5. Comparative Assessment: Regional Food Waste Governance – Croatia vs. Italy (Abruzzo & Veneto)

An integrated assessment of regional food waste management reveals significant differences between the Italian regions (Abruzzo and Veneto) and the Croatian counties/cities. Although all operate within the broader EU and national policy frameworks, the degree of institutionalisation, stakeholder involvement, and operational focus on food waste is very different.

Both Abruzzo and Veneto have introduced structured, multi-layered frameworks with binding regional measures that are reinforced by national law. In Abruzzo, Regional Law no. 4/2016 supports the redistribution of surplus food, embedded in the 2018–2020 Waste Management Plan and supported by campaigns such as *DEMETRA*. Veneto complements this approach through an explicit focus on the circular economy, monitoring systems, and cross-sector cooperation between the agricultural and food sectors and the municipalities.

These regions show:

- binding legal frameworks,
- performance-oriented campaigns,
- collaboration between stakeholders, companies, and the public,
- digital and behavioural tools (apps, educational cookbooks), and

- tax incentives and integration of public procurement.

In their waste plans (Karlovac, PGŽ, Zadar, Gospić) and implementation reports (Novalja, Rijeka), the Croatian counties generally treat food waste as part of biowaste. Despite measures such as the distribution of composters and awareness campaigns, only Rijeka is approaching the Italian model with its *FUSILLI Living Lab* and the *Food Waste Analyser App* (Steinbeis Europa Zentrum, 2025). Nevertheless, the efforts remain voluntary, non-binding and financially limited. Table 9 provides a comparative overview of these differences. Emerging trends, such as the inclusion of schools and the public sector in the *FUSILLI Living Labs*, indicate a potential for expansion (Steinbeis Europa Zentrum, 2025). However, there are still no national/regional legal instruments to prevent food waste, unlike in Abruzzo, where the regional law allows for donation mechanisms and incentives.

Table 9: Comparative Dimensions

Policy Dimension	Italy (Abruzzo & Veneto)	Croatia (Regional Level)
Legal framework on food waste	Specific regional laws (e.g., Abruzzo Law 4/2016)	No regional laws on food waste
Strategic inclusion in waste plans	Integrated with the circular economy and food systems	Present in general bio-waste strategies, but food waste is rarely isolated
Quantitative targets/monitoring	Partial (Veneto more advanced than Abruzzo)	Absent
Food donation and redistribution	Institutionalised, incentivised	Rarely mentioned
Multi-stakeholder engagement	Strong HORECA, NGO, and municipal collaboration	Mostly public sector actors
Behavioural tools and campaigns	Numerous (apps, education, food bags, cookbooks)	Some tools (Rijeka), but not systemic
Education and citizen participation	Active, formalised in school programmes (e.g., Abruzzo 2023 guidelines)	Limited to general environmental awareness
Institutional coordination	Regional offices collaborate with municipalities and associations	Fragmented implementation, uneven across counties

General Recommendations for Further Policy Development at the Regional Level

- Develop enforceable regional action plans with clear targets, timelines, and KPIs for food waste.
- Formalise partnerships between municipalities, waste management companies, NGOs, food banks, and HORECA.
- Invest in infrastructure for food donation, such as cold storage, redistribution centres, and logistics.
- Mandate food waste data collection, separate from general bio-waste collection, with transparent regional reporting.
- Expand and support living lab initiatives such as Rijeka's, backed by innovation funds and institutional support.
- Consider regionally adapted ordinances or regional legal instruments modelled on Italian ones (e.g. Abruzzo Law no. 4/2016) to provide legal and fiscal support for donation policies.
- Integrate food waste education into local school curricula and public engagement programmes.
- Strengthen institutional capacity through training for regional and local officials in food waste policy and implementation.

A transition from fragmented bio-waste programmes to a structured, monitored food waste policy will enable Croatian regions to capitalise on the reduction of surplus food, support the resilience of rural and urban areas, promote the circular economy and align with EU and global sustainability targets.

PRACTICAL RECOMMENDATIONS AIMED AT IMPROVING THE OVERALL FRAMEWORK FOR REDUCING FOOD WASTE

Food waste policy faces several cross-cutting challenges that hinder its effectiveness across EU, national, and regional levels. Gaps and challenges in the food waste prevention and management framework are provided in Table 6. Regulatory complexity and fragmentation

among EU, national, and regional laws create confusion for stakeholders and make progress difficult to measure. The lack of mandatory requirements for supermarkets, particularly around surplus food donations, limits the impact of voluntary initiatives. Additionally, inconsistent monitoring and data collection across jurisdictions prevent accurate performance comparisons and hinder the identification of best practices. Many promising initiatives are undermined by short-term funding, which prevents long-term planning and the scaling of effective programmes. Finally, while education and local action are crucial to reducing food waste, they remain underdeveloped. Without enforceable targets and structured support, efforts by schools and municipalities have limited impact. To overcome these issues, policies must promote regulatory coherence, mandatory supermarket engagement, standardised monitoring, long-term funding mechanisms, and integration of education and awareness into formal frameworks.

European Union Level

At the EU level, the framework, while comprehensive, faces significant hurdles in its real-world application. One of the main issues is the inconsistent implementation of EU directives across Member States. The Waste Framework Directive, the Farm to Fork Strategy, and the Circular Economy Action Plan provide a policy foundation, but the degree to which each Member State internalises and enforces these policies varies greatly. This leads to an uneven playing field and slows overall progress in reducing food waste across the Union. A key part of the problem is that, despite the framework, the EU is experiencing a lack of binding targets, so there's less regulatory pressure to achieve results.

Furthermore, the complexity of EU regulations presents another major challenge. The multi-layered and often intricate nature of directives like the Waste Framework Directive and the Circular Economy Action Plan can be overwhelming, especially for small and medium-sized enterprises (SMEs). These businesses, which form a significant part of the food supply chain,

may lack the resources or expertise to navigate the regulatory landscape effectively, leading to lower compliance rates and hindering overall waste reduction efforts.

Italian National and Regional Level

Italy's regulatory framework also has its shortcomings. The primary focus of the Gadda Law (Law 166/2016) is on facilitating food donation and redistribution, which has undoubtedly had a positive social impact. However, there is a relative lack of emphasis on food waste prevention at source. While redistribution is a valuable strategy, it's essentially dealing with the symptoms rather than the root causes of the problem. There is a need to incentivise prevention measures among food producers and retailers.

Another challenge lies in stakeholder engagement. While some sectors are actively involved in food waste reduction initiatives, there is insufficient participation from others, including both businesses and the general public. This limited engagement undermines the effectiveness of existing policies and reduces their overall impact.

Similarly, at the regional level, the Abruzzo region's regulatory framework, primarily defined by Regional Law 12 January 2016, n. 4, also exhibits a limited focus on upstream prevention of food waste. The emphasis is largely on recovering and redistributing surplus food, which, while beneficial, does not address the fundamental issue of waste generation. Moreover, the Abruzzo framework's dependence on local resources poses a significant challenge. The success of the region's food waste reduction initiatives hinges on the capacity and willingness of local authorities and organisations to participate. This can lead to inconsistencies in implementation across different municipalities within Abruzzo, as some areas may have more resources or a greater commitment to addressing food waste than others.

To strengthen the system, Abruzzo should begin by streamlining food donation processes. This includes simplifying bureaucratic procedures to make participation easier for businesses and enhancing tax incentives to ensure that redistribution is economically attractive. Establishing a regional digital platform that directly connects food businesses with

charities and food banks would further optimise surplus management and reduce logistical barriers.

In parallel, the region must implement a standardised food waste monitoring system. A regional tracking tool should be introduced to measure waste at every stage of the supply chain — from production and distribution to retail and consumption. This data infrastructure would empower businesses to set voluntary waste reduction targets and allow policymakers to design targeted interventions based on real-time insights. Such a system would also support more efficient allocation of resources and foster transparency and accountability across sectors.

Beyond infrastructure, Abruzzo should invest in stakeholder engagement and public awareness. Expanding food waste education programmes in schools, universities, and public campaigns can help cultivate a culture of prevention. Regional initiatives should promote responsible consumption and proper home food storage techniques. Moreover, encouraging large retailers and food producers to voluntarily report their food waste data would reinforce a shared commitment to sustainability.

Together, these measures would mark a strategic shift from reactive redistribution to proactive prevention.

In the Veneto region, food waste prevention is incorporated within broader waste management and circular economy strategies, mainly through Regional Law No. 40/2003 and the more recent Regional Law No. 20/2023, which also promotes food surplus redistribution. As highlighted at the national level, the approach remains more focused on downstream recovery than upstream prevention, with limited actions addressing the root causes of waste.

Key challenges include the absence of a standardised monitoring system across municipalities and uneven stakeholder engagement: stronger among some municipalities, NGOs, and retail chains, but weaker for SMEs, hospitality operators, and rural producers.

Additionally, initiatives often rely on temporary or project-based funding, frequently linked to EU or national programmes.

Regional initiatives such as the Veneto Waste Management Plan, the *Food4All* project, support for social enterprises, and collaborations with universities provide valuable frameworks for food waste reduction, yet gaps remain in long-term financial support, integration with circular economy principles, and the practical application of research outcomes. These gaps can be addressed through structured and stable financial mechanisms, ensuring that initiatives are adequately supported over time.

To address these current gaps and enhance the effectiveness of food waste prevention and management, the following measures are recommended for the Veneto Region:

1. Establish a dedicated regional coordination unit or officer

- Create a specific office or designate a regional official responsible for aligning food waste initiatives with national and EU frameworks. This unit should:

○ map and monitor existing initiatives and stakeholders;

○ provide guidance and feedback to municipalities, businesses, and civil society, and;

○ track and publicly report progress on implementation of relevant laws and plans.

2. Introduce targeted fiscal and incentive mechanisms

- Develop structured schemes to engage actors across the supply chain (including SMEs, hospitality, retailers, and consumers) by linking measurable results to tangible benefits. Possible actions include:

○ reductions in municipal waste fees for businesses and households demonstrating verified food waste prevention measures (or proven reductions in food waste volumes), and;

○ tax relief or grants tied to specific targets, such as surplus donation volumes or adoption of waste-reduction technologies (e.g., low-interest financing or non-repayable grants for technologies and equipment aimed at preventing and reducing food waste).

By combining institutional coordination and clear economic levers, Veneto could shift from fragmented, project-based efforts toward a more systemic and measurable reduction of food waste.

Finally, the Apulia Region, like many other Italian areas, is facing an important challenge in preventing food waste. To address this issue, the Apulia Region has launched several initiatives and strategies aimed at recovering excess food and promoting education and awareness. However, greater efforts should be directed towards bridging the gap that arises in large-scale distribution, where managing excess food in a cost-effective manner is difficult due to the small quantities generated in different locations, making recovery economically unviable.

Promoting the creation of a regional logistics platform for managing excess food in large-scale distribution would undoubtedly provide a response to this critical issue. In fact, the analysis of the regional context highlights the lack of a logistics platform that connects all distribution operators and can manage excess food before it becomes waste.

Another effort that the Apulia Region could make is to introduce an obligation to account for waste with performance indicators to measure inefficiencies and reward the most virtuous operators. This could also be structured into a certification system that assigns a sustainability label based on criteria related to efforts made to combat waste.

At the end, the practical recommendations could be summarised as below:

Key Challenges	**Proposed Solutions**
Managing Excess Food in Large-Scale Distribution	Regional Logistics Platform
Lack of Accountability and Incentives	Obligation of Waste Accounting and Certification

Croatian National and Regional Level

Recommendations for effectively reducing food waste at the Croatian level should include stronger, albeit non-binding, regulatory measures, economic incentives, improved data systems, increased institutional co-operation, and targeted public education. The introduction of mandatory reporting and measurement of food waste for large supermarkets, catering companies, and public institutions is crucial. This should be supported by clearly defined national reduction targets aligned with SDGl 12.3 — such as a 30% reduction by 2030 — and enforced through structured inspections and audits. To incentivise active participation, fiscal measures such as VAT exemptions or tax credits should be explicitly targeted at companies participating in food donation and circular economy initiatives, complemented by national financial frameworks to support infrastructure investments and long-term waste prevention strategies. In addition, the development of standardised national guidelines and KPIs combined with a central digital platform to monitor food waste flows, and the redistribution of surpluses would significantly improve data transparency and accountability. Institutional coordination should be strengthened by establishing an inter-ministerial committee composed of the relevant ministries (agriculture, environment, and economy) and by clearly defining their roles and responsibilities in order to establish an effective link between national policy and local implementation. Finally, educational modules in schools for future food waste prevention and comprehensive national awareness-raising campaigns targeting consumers, SMEs, and public institutions are crucial to promote lasting behavioural change and the widespread adoption of practical food waste prevention measures.

Practical recommendations for tackling food waste at the regional level in Croatia should focus on developing explicit action plans, fostering local partnerships, strengthening data systems, scaling local innovations, and improving capacity building and education. Counties should be tasked with developing specific food waste reduction strategies that include clearly defined targets, measurable KPIs, and structured implementation timelines that align

with national targets, accompanied by clearly defined roles and responsibilities at the regional and municipal levels to ensure accountability. To facilitate systematic redistribution, regions must encourage collaboration between municipalities, local businesses, food banks, non-governmental organisations, and utilities and support them through targeted investments in key infrastructure such as storage facilities, logistics systems, and surplus food redistribution centres. In addition, regional and local authorities should introduce mandatory separate collection of food waste as part of a wider bio-waste monitoring system to ensure transparency and enable benchmarking, sharing of best practise and continuous improvement. Successful local models — such as the *FUSILLI Living* Labin Rijeka — should receive institutional support and financial backing through regional innovation funds to encourage replication in other districts and municipalities and to support circular economy initiatives and projects at the municipal level. In addition, the possibility of developing regionally adapted legal frameworks or ordinances to prevent food waste should be explored, following the example of Italian regions such as Abruzzo, where binding regional laws support food donation and redistribution programmes. Finally, mandatory training for local government officials and waste management companies, complemented by tailored regional awareness-raising campaigns involving schools, community organisations, the hospitality industry, and SMEs, will significantly promote behavioural change and improve regional capacity for effective food waste management.

POLICY ACTIONS? CORPORATE SOCIAL RESPONSIBILITY AND ESG REPORTING

Corporate social responsibility (CSR) and environmental, social, and governance (ESG) reporting have proven to be important tools to drive food waste reduction targets beyond legal requirements. CSR frameworks promote companies' voluntary commitment to socially and environmentally responsible practices, while ESG reporting mechanisms offer structured transparency regarding a company’s impact on sustainability indicators —

including food waste management. CSR and ESG reporting are, therefore, important levers for embedding food waste prevention across the private sector. While current regulatory frameworks primarily target public administration and voluntary sector action, CSR and ESG approaches offer systematic opportunities to improve corporate transparency, fully engage businesses, and align sustainability goals across the supply chain.

Although some companies — particularly in the retail and hospitality sectors — have proactively adopted measures such as surplus food donation, awareness campaigns and optimised inventory management, the implementation of these practices remains fragmented and inconsistently reported. ESG reporting, mandated by the EU Corporate Sustainability Reporting Directive (CSRD) and structured by the European Sustainability Reporting Standards (ESRS), specifically requires disclosures on resource efficiency and community impact, potentially including food loss and waste. However, current disclosures are often limited, inconsistent, and lack industry-specific KPIs, reducing their usefulness for benchmarking and continuous improvement.

In response, food waste initiatives are increasingly being integrated into corporate sustainability agendas, particularly in the agri-food, retail, and hospitality sectors. This is achieved through strategic partnerships with non-profit organisations, internal audits and reduction targets, consumer awareness campaigns, and sustainable sourcing practices. At the same time, the ESG framework under the CSRD — especially ESRS E5 (Resource Utilisation and Circular Economy) and ESRS S3 (Communities Affected)— will impose greater obligations on larger companies to systematically measure, monitor, and reduce food waste.

Despite these developments, CSR and ESG practices currently face major challenges. These include the lack of standardised food waste indicators within ESG metrics, limited consideration of food waste in ESG ratings and investment criteria, inconsistent adoption of CSR by SMEs, and insufficient integration between regional food waste strategies and corporate reporting. Addressing these challenges requires comprehensive policy interventions. To promote effective integration of CSR, ESG, and national food waste

strategies, governments should mandate standardised KPIs on food waste in ESG reporting, in particular under ESRS E5 and S3. The award of public contracts could be explicitly linked to the company's documented performance in preventing food waste. In addition, the establishment of a standardised national reporting platform based on the EU taxonomy and CSRD criteria would improve transparency and accountability. Tax incentives such as tax deductions and VAT exemptions should reward demonstrable reductions in food waste or verified food donations. To ensure inclusion, SMEs — especially in the hospitality and retail sectors — should be supported through digital reporting tools, training programmes, and capacity-building initiatives. Moreover, regional public-private partnerships for the redistribution of food surpluses should be strengthened and complemented by transparent performance monitoring systems. Finally, the explicit inclusion of food waste indicators in national circular economy strategies, sustainability ratings, and ESG investment criteria would further incentivise responsible and sustainable businesses. Table 10 provides a brief overview of the key policy recommendations with short descriptions that clearly outline measures to improve CSR and ESG reporting practices in relation to food waste.

Table 10. Policy Recommendations for CSR and ESG Reporting in the Food Waste Context

Policy Recommendation	Description
Mainstream food waste indicators into ESG reporting frameworks	Integrate harmonised KPIs (e.g., tonnes of food waste per production unit) under ESRS.
Encourage recognition in public procurement	Allow public institutions to include CSR/ESG food waste performance in procurement criteria.
Develop regional public-private partnerships	Support collaborative networks for food redistribution and circular food systems.
Offer fiscal incentives	Provide tax breaks and grants for companies with public food waste reduction commitments.
Promote SME capacity-building	Support small enterprises with reporting tools and technical assistance to align with ESG.

CONCLUSION

This report analysed policy frameworks related to food waste prevention and management in Italy and Croatia, on the national, regional, and supranational levels. It included the identification of gaps in the current policies, best practices, and recommendations for improvement, as well as a comparative review of frameworks for food waste prevention and management on the regional level in the two countries (regions of Abruzzo and Veneto in Italy, and various counties in Croatia). The review covered legislative and strategic actions across the EU, national, and regional levels, identifying key gaps and highlighting practical recommendations.

The analysis of food waste prevention and management policies across Croatia and Italy, at both national and regional levels, reveals a shared recognition of the urgency of the issue and a strong alignment with European Union objectives. However, while both countries have established solid legislative and strategic foundations, their approaches demonstrate different strengths and weaknesses, which together provide valuable lessons for moving forward.

At the national level in Croatia, substantial progress has been made over the past decade. The adoption of the Waste Management Act, the Agriculture Act, and the Ordinance on Food Donation has created a coherent legal structure, supported by strategic plans such as the National Plan for the Prevention and Reduction of Food Waste 2023–2028. This framework is well aligned with EU directives and Sustainable Development Goal 12.3, providing clear direction for action. Public engagement has been supported by awareness campaigns like *Eat, Share. Food is not Waste*, while digital innovations such as the *e-doniranje* platform demonstrate the country's capacity to experiment with modern solutions. Nevertheless, Croatia's reliance on voluntary guidelines, limited fiscal incentives for businesses, and fragmented coordination between ministries remain key barriers to implementation. Enforcement and monitoring systems are not yet robust enough to provide reliable data or

ensure accountability, and local authorities often lack the resources needed to translate national strategies into effective local initiatives.

By contrast, Italy's national framework is more mature, benefiting from earlier legislative milestones such as the Good Samaritan Law (2003) and the Gadda Law (2016), which simplified food donation procedures and provided incentives for businesses. Italy has also developed strategic instruments like the National Food Waste Prevention Plan (PINPAS) and a set of minimum environmental criteria that extend food waste considerations into sectors such as catering, public procurement, and event management. Complementing legislation, Italy has established monitoring institutions — notably the OERSA observatory and the Waste Watcher International Observatory — which provide valuable data on surplus food and consumer behaviour. More recently, experimental measures like the *Food Income* programme have linked food waste reduction with social policy, redistributing unsold food to vulnerable groups. Despite these advances, Italy still faces challenges of fragmentation and uneven enforcement across regions, as well as reliance on short-term funding mechanisms that limit long-term planning.

At the regional level, both countries showcase innovative practices that can serve as inspiration for broader policy development. In Abruzzo, the regional act on food waste (2016) created structured networks for surplus redistribution, while projects such as *DEMETRA* and campaigns like *BIS!* engaged households and restaurants in awareness-raising and practical waste reduction. The Integrated Waste Management Plan further embedded food waste prevention into broader sustainability strategies. Similarly, Veneto has integrated food waste management into regional agricultural policies, promoted circular economy practices, and fostered partnerships between municipalities, civil society, and research institutions. These initiatives highlight the importance of localised solutions, which allow for tailoring strategies to specific socio-economic conditions and mobilizing community-level stakeholders.

In Croatia, regional engagement is less developed but growing. Counties such as Primorje-Gorski Kotar and Zadar have piloted local projects on food donation and awareness, often

with support from NGOs and municipal authorities. These initiatives remain fragmented and heavily dependent on external funding, but they demonstrate the potential of local-level innovation. Stronger coordination between national and local authorities, combined with adequate financial and technical support, could enable Croatian regions to replicate and scale up successful models seen in Italian regions like Abruzzo and Veneto.

Together, the national and regional experiences of Croatia and Italy illustrate the importance of combining top-down regulatory clarity with bottom-up innovation and engagement. Croatia's progress demonstrates how a younger EU Member State can quickly build a strategic framework, while Italy's experience shows the value of sustained legislative evolution, monitoring systems, and integration of food waste into diverse policy areas. At the regional level, Italian best practices highlight the potential of localised strategies that mobilise municipalities, NGOs, and businesses, while Croatian regions point to the need for stronger capacity-building and institutional support to unlock similar results.

The overall conclusion is that reducing food waste requires a multi-level governance model where EU directives provide common direction, national governments ensure legal and strategic coherence, and regions develop tailored, context-specific solutions that engage communities directly. Croatia and Italy are both progressing, albeit with different strengths, and their combined experiences offer a roadmap for the Adriatic region — one that balances legislation with education, national strategy with local innovation, and prevention with redistribution. By learning from each other and strengthening cross-border cooperation, both countries can accelerate progress toward the shared goal of halving food waste by 2030 and building more sustainable and equitable food systems.

POLICY BRIEF: REDUCING FOOD WASTE AND STRENGTHENING FOOD DONATION National and Regional Insights from Croatia and Italy

Executive Summary

Food waste represents one of the most pressing sustainability challenges of our time, with direct consequences for the environment, the economy, and social well-being. Both Croatia and Italy have recognised the urgency of this problem and have made substantial progress in developing policy frameworks to reduce food waste and support food donation systems. Croatia has rapidly progressed in recent years with the adoption of the National Plan for the Prevention and Reduction of Food Waste 2023–2028, while Italy benefits from a more mature framework shaped by nearly two decades of legislative development. Regional experiences, particularly in Abruzzo and Veneto, highlight the value of localised governance, innovative networks, and the crucial role of civil society. Together, the national and regional experiences of both countries offer policymakers practical lessons on how to balance top-down regulation with bottom-up innovation and how to foster cross-border learning that can accelerate progress across the Adriatic region.

Croatia: National Progress, Local Challenges

Croatia's national framework is anchored in the National Plan for the Prevention and Reduction of Food Waste 2023–2028, which emphasises prevention, redistribution, education, innovation, and measurement. This plan is supported by the Agriculture Act and the Ordinance on Food Donation, which collectively establish the legal foundation for the regulation of intermediaries and donors. Croatia has also embraced digital innovation, with the launch of the *e-doniranje* platform, which connects food donors and intermediaries, thereby reducing administrative burdens and increasing efficiency. Public awareness efforts, such as the campaign *Eat, Share. Food is not Waste*, seek to mobilise households, which are responsible for a significant share of food waste.

However, challenges persist. Enforcement capacity remains limited, and coordination between national and regional bodies, institutions and agencies is fragmented. Many

municipalities lack resources to translate national strategies into local action, and while NGOs play an active role, they are heavily reliant on project-based funding. This creates uncertainty and prevents the scaling-up of local initiatives. A more structured system of support — including stable financial mechanisms and capacity-building for local actors — would allow Croatia to strengthen the link between national objectives and community-level implementation.

Italy: Legislative Continuity and Regional Leadership

Italy has developed a more comprehensive framework over the past twenty years, starting with the Good Samaritan Law (2003), which clarified the legal status of donated food, followed by the Gadda Law (2016), which streamlined donation procedures and introduced tax incentives. These legislative measures created strong incentives for businesses to participate in redistribution networks. Italy's National Food Waste Prevention Plan (PINPAS) and the establishment of institutions such as OERSA and the Waste Watcher International Observatory provide systematic data collection, monitoring, and policy evaluation. Such mechanisms help Italy not only track progress but also design targeted interventions informed by robust evidence.

Italy has also introduced innovative programmes such as *Food Income*, which directly connects unsold food with vulnerable populations, thereby linking environmental objectives with social inclusion. Furthermore, Italy has integrated food waste prevention into public procurement and catering policies, extending the agenda beyond households and businesses to include the public sector. Despite these advances, Italy faces the challenge of uneven implementation across regions and a reliance on short-term project funding that can undermine the sustainability of local initiatives. To consolidate its achievements, Italy will need to ensure consistent national coordination and provide stable resources for scaling successful practices.

Regional Insights: Abruzzo, Veneto, and Croatian Counties

Regional experiences demonstrate the importance of localised governance. In Croatia, counties and municipalities are still at an early stage in addressing food waste, with innovative initiatives often emerging from partnerships between NGOs and local governments. Examples include food donation pilots and awareness-raising campaigns, but these efforts remain fragmented and lack institutional embedding. Regional authorities require stronger financial and technical support to institutionalise and replicate these practices. Without such backing, Croatia risks leaving much of its local potential untapped.

In Italy, regional experiences demonstrate how localised governance can significantly strengthen national objectives. Abruzzo has developed a regional act on food waste (2016) and embedded prevention in its Integrated Waste Management Plan. Initiatives such as *BIS!* and *DEMETRA* actively engage schools, households, and restaurants, creating broad awareness and encouraging practical action. Veneto, on the other hand, has emphasised multi-actor collaboration, building redistribution networks jointly managed by municipalities, NGOs, and businesses. This collaborative approach not only enhances efficiency but also strengthens community solidarity and trust.

These examples from Abruzzo and Veneto illustrate how regions can serve as laboratories of innovation, adapting solutions to local socio-economic conditions. By comparison, Croatian regions are at an earlier stage but show promising signs of creativity and engagement, which could be enhanced through better alignment with national strategies and targeted financial support.

Policy Insights and Recommendations

The comparative analysis of Croatia and Italy reveals several key insights. National governments play a vital role in establishing legal clarity, providing incentives, and creating monitoring frameworks. Regional governments, however, are equally important in ensuring that strategies are adapted to local realities, mobilizing civil society, and building partnerships with the private sector. Croatia should prioritise strengthening enforcement

mechanisms, ensuring consistent financial support to intermediaries, and investing in education and public awareness campaigns. Italy should work on scaling up its regional best practices and ensuring that funding mechanisms are more stable and long-term, enabling sustainable innovation. Both countries can benefit from enhanced cross-border cooperation, knowledge exchange, and joint pilot projects that test new approaches adapted to the Adriatic context.

Conclusion

Croatia and Italy are both committed to the EU's objective of halving food waste by 2030, but they approach the challenge from different starting points. While Italy has had more time to refine its policy framework, Croatia has demonstrated the ability to quickly align national legislation with EU standards and to experiment with innovative tools. Croatia demonstrates the dynamism of a younger EU Member State that has rapidly aligned with European objectives and introduced innovative tools, while Italy showcases the benefits of long-term legislative evolution, comprehensive monitoring, and strong regional engagement. Together, these experiences highlight the importance of a multi-level governance model that integrates national strategies with regional action and fosters partnerships across government, business, and civil society. For policymakers in both countries, the lesson is clear: progress depends on balancing national direction with regional flexibility, reinforcing legislation with adequate resources, and embedding innovation within long-term structures. By embracing cross-border learning and cooperation, Croatia and Italy can strengthen their systems, accelerate progress, and become leaders in building sustainable and equitable food systems across the Adriatic region.

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COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS
Questions and Answers on the EU Action Plan against wildlife trafficking

Common Fisheries Policy (CFP) Reform (various regulations)
Regulation 1380/2013

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https://www.europarl.europa.eu/news/en/press-room/20250217IPR26975/deal-on-new-eu-rules-to-reduce-textile-and-food-waste

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Food loss and waste account for 8-10% of annual global greenhouse gas emissions; cost USD 1 trillion annually
https://unfccc.int/news/food-loss-and-waste-account-for-8-10-of-annual-global-greenhouse-gas-emissions-cost-usd-1-trillion

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Gazzetta Ufficiale

National Waste Prevention Programme
Programma Nazionale per la Gestione dei Rifiuti | Ministero dell'Ambiente e della Sicurezza Energetica

National Strategy on Circular Economy
Riforma 1.1 - Strategia nazionale per l'economia circolare

National Sustainable Development Strategy
Strategia Nazionale per lo sviluppo sostenibile

National Food Waste Prevention Plan (PINPAS)
PINPAS

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DECRETO 10 marzo 2020

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https://www.ecodallecitta.it/spreco-alimentare-italia/#google_vignette

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https://www.foodforfuture.unipr.it/news-en/introduction-of-regulatory-provisions-on-the-practice-of-the-doggy-bag-in-italy-a-first-step-towards-a-new-anti-waste-culture

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https://decrescitafelice.it/2024/11/mdf-senato-riduzione-sprechi-alimentari/

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Eco Delle Città - Spreco di cibo: doggy bag obbligatoria nei ristoranti, la proposta di Legge presentata alla Camera | Il testo
https://www.ecodallecitta.it/doggy-bag-obbligatoria-proposta-di-legge-alla-camera-il-testo/

Proposta di legge 1643. Introduzione dell'obbligo di consentire l'asporto di cibi e bevande non consumati dal cliente negli esercizi di ristorazione.
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Innopaq: creare produzioni alimentari eccellenti in Abruzzo grazie all'innovazione in agricoltura
The Innopaq project: Creating excellent food production in Abruzzo through innovation in agriculture

"Se mi lasci non vale Project"
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Slowfood Abruzzo
Slowfood Abruzzo
Eat me Home

Documento Programmatico Slowfood Abruzzo-Molise
Presidi Slow Food: ecco i 18 presenti in Abruzzo | Visitare Abruzzo
EU Platform on Flood Losses and Food Waste (FLW) working together to fight food waste
https://sdgs.un.org/partnerships/eu-platform-food-losses-and-food-waste-flw-working-together-fight-food-waste

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