

Chapter 11

Defining the Meaning of Food Waste as a Matter of Urgency

Monica Delsignore, Margherita Ramajoli and Carola Ricci

Abstract The lack of a uniform definition of waste worldwide applies to food waste as well. International organizations (including regional integration organization as the EU) and State governments refer to different definitions. In the International perspective, policy and definition of food waste have been traditionally developed by the Food and Agriculture Organisation (FAO), with the explicit intent to struggle world hunger. Nonetheless, the same initial goal of combatting global food insecurity has been changing recently adding a new perspective to the traditional narrow concept, brought in by sustainability and its broad interpretation including the circular economy target, contained in the 2015 post-Global Millennium Development Goals. The challenge is offering the chance for a clear definition, distinguishing the European framework from the International context only on the basis of the specific scope of such a peculiar Regional Integration Organization. This Article aims to demonstrate that the European definition of food waste has been targeting so far, as for the legislative perspective, the specific goal of environmental impact reduction, which is just one of the numerous aims identified within the International legal framework. The National systems in the European context ask for an unambiguous definition in order to measure and estimate in a credible, practical and consistent manner the extent of loss and waste and to identify where the loss and waste occur. A precise definition will enable countries, companies and other organizations to take sustainable decisions and program their investments. Having a clear and consistent legal framework will certainly assist

M. Delsignore (✉) · M. Ramajoli
School of Law, Università Degli Studi Di Milano-Bicocca,
Piazza Dell'Ateneo Nuovo 1, 20126 Milano, Italy
e-mail: monica.delsignore@unimib.it

M. Ramajoli
e-mail: margherita.ramajoli@unimib.it

C. Ricci
Department of Political and Social Sciences, Università Degli Studi Di Pavia,
Corso Strada Nuova 65, 27100 Pavia, Italy
e-mail: carola.ricci@unipv.it

businesses and regulators to make decisions on a more certain basis. That is a key factor in order to achieve the ambitious target of the circular economy. In the European Union system, there is no specific definition of food waste under the Waste Framework Directive (WFD, No 2008/98/EC). The previous Directive (No 75/442/EEC) containing a definition was amended in 1991 with the addition of “categories of waste” (Annex I) and the omission of any reference to national law. A lack of legal clarity under EU law regarding the distinction between waste and non-waste could hinder the efficient use of by-products. That is why the European Parliament has recently called on the EU Commission to develop guidance on the implementation of Article 5 of the WFD which defines by-products. The distinction between waste, by products and end of waste is a key issue in the Circular Economy Package and would also help in raising awareness among food industries, retailers and consumers.

Keywords Food waste · Food loss · Circular economy

11.1 Introduction

Fighting food waste is the most fashionable policy nowadays, especially in Italy where the Expo exhibition *Feeding the planet, energy for life* has just taken place.

Much has been written and said about the urgent need to reduce food loss and waste, although little has actually been done about it (Gonzalez Vaqué 2015).

In European Union policy makers are trying to draw a complete picture of food waste and set ambitious targets to be achieved.

Furthermore, across the world, there is growing recognition that the prevailing model of economic growth, grounded in ever-increasing resource use and pollutant emissions, cannot be sustained indefinitely.

The increased interest in food waste valorization springs from the actual situation, which is assumed becoming alarming.

Recently in Paris the Climate Change Conference COP21 highlighted the environmental impacts of food waste. Food waste is today the single largest type of waste entering landfills in most high-income countries, with a major impact on the environment (in fact, food in landfill decomposes over long periods of time, creating potent gases—like methane, a gas with the 21 times the global warming potential of carbon dioxide).

In European Union policy makers are trying to draw a complete picture of food waste and set ambitious targets to be achieved. The *Circular Economy Package* asks for food waste reduction and prevention. In order to achieve those targets Member States needs to know which substances and materials are to be considered food waste.

11.2 The Lack of a Harmonized Definition of Food Waste

As the European Environmental Agency confirmed in its annual report for 2014, Europe's food system is part of a global market in which food and animal fodder are increasingly traded across the globe. Imports of food and fodder to the EU are increasing, indicating that a considerable share of life-cycle environmental pressures and impacts related to food consumption in Europe is felt outside its borders. Food is the household consumption category with the highest embedded environmental pressures. Large amounts of food losses and food waste across the whole food chain are responsible for a considerable share of environmental impacts and a waste of resources.

Environmental impacts from food production and food waste in Europe can be mitigated through regulation and market-based instruments, including the removal of environmentally harmful subsidies.

Business and civil society have surely an important role to play through greening of supply chains and changes in consumption behavior, as economics are stressing.

Nevertheless, our point is that regulation has the key role.

The importance of default rules is evident especially when environmental issues are at stage:

Well-chosen default rules, attentive to the full set of costs and benefits, are likely to emerge as a significant contributor to efforts to protect human health and the environment—a tool in the regulatory repertoire that is potentially more effective, in many cases, than either information and education or substantial economic incentives (Sunstein and Reisch 2013, p. 158)

European Union needs to find good and beneficial use for safe food that is presently thrown away, through different ways, but first of all needs a clear ruled definition of food waste.

Currently the legal status of food waste is still unsettled.

The uncertainty of the term *waste* has not been sufficiently examined, assuming that waste can be inserted un-problematically into existing legal frameworks. Even more, the distinction between waste and not waste is sometime misunderstood although the jurisprudence seeks to address the problem. Definitions of food waste differ a lot because what food waste consist of has a strong impact on its qualification. This contributes to create even more uncertainty as regulatory authority is dispersed across different actors and level of government (Baldwin et al. 2012).

As it will be explained, food waste apparently finds different declinations in International, European and National law. The only explicit definition can be found at the International level, even if it is not a globally valid definition, whether other levels do not define specifically food waste.

In the International perspective, policy and definition of food waste have been traditionally developed by the Food and Agriculture Organisation (FAO), with the explicit intent to struggle world hunger. That peculiar perspective doesn't find an equivalent in the other systems. Nonetheless, the same initial goal of combatting global food insecurity has been changing recently adding a new perspective to the

traditional narrow concept, brought in by *sustainability* and its broad interpretation having implications for the same international definition of food waste and losses.

The Article aims to demonstrate European definition of food waste is targeting, as for the legislative perspective, the specific goal of environmental impact reduction, which is just one of the numerous aims identified within the International legal framework.

What is at stake is that a considerable amount of food is being discarded and that food waste give rise to both environmental and ethical problems and economic and social costs, so that measures have to be taken towards halving food waste and preventing generation of bio-waste. This perspective is far away from the initial FAO notion of food waste but not so distant from the more recent one contained in the post-Global Millennium Development Goals and the challenge is offering a clear definition, distinguishing the European framework from the International context only on the basis of the specific scope of such a peculiar Regional Integration Organization.

The National systems in the European context ask for an unambiguous definition in order to measure and estimate in a credible, practical and consistent manner the extent of loss and waste and to identify where the loss and waste occur. A precise definition will enable countries, companies and other organizations to take sustainable decisions and program their investments. Having a clear and consistent legal framework will certainly assist businesses and regulators to make decisions on a more certain basis. That is a key factor in order to achieve the ambitious target of the circular economy.

The first paragraph will examine the evolution of the definition of food waste in International law. The International level is targeting the *Zero Hunger Challenge*, especially after 2012 and Rio+20, recognizing interconnectedness of world's food systems and impact on poverty, hunger, malnutrition, natural resources and climate and lately adding a new perspective of the circular economy, inviting all the States, civil society and other stake-holders not only to prevent and reduce waste but also to reuse and recycle. That perspective became finally in some way convergent with the actual European standpoint of sustainable choices. As it will be explained in paragraph two, the European Community had been considering, for a long time, food just as a good in the market. The Commission, only few years ago, within the Communication of 30 July 2010, establishing the High Level Forum for a Better Functioning Food Supply Chain, pointed out the importance and centrality of Agro Food Industry for the competitiveness and functioning of internal market. Since last decade, the European legislator has mainly spent its efforts towards introducing rules to protect water from waste and for waste management (Bruno 2014) and food waste has not been for long time a specific issue.

Just recently, in the resolution of the 19 January 2012,¹ the European Parliament reasons on how to avoid food wastage. The resolution underlines health and environmental implications since unconsumed food make a major contribution to

¹P7_TA(2012)0014.

global warming and food waste produces methane, which as a greenhouse gas is 21 times more powerful than carbon dioxide. The Parliament calls ‘on the Council, the Commission, the Member States and players in the food supply chain to address as a matter of urgency the problem of food waste along the entire supply and consumption chain’.

Finally in 2014, the Commission has drafted a proposal for amending waste directives, underlining the necessity of providing the ‘definitions of municipal waste, food waste, backfilling’ in the Directive 2008/98/EC.

Elaborating this new definition, looking at the circular economy targets, represents a central issue for a sustainable food supply chain, as turning food waste into a resource is an essential part of increasing resource efficiency and closing the loop and countries, companies and research laboratories need a clear definition of food waste in order to plan their investments and research.

11.3 Food Waste in International Law: From ‘Other’ to the ‘3R’ Approach

The definition of food waste being crucial, one would expect to find at least a uniform concept within the global legal framework. Waste is formally defined in different national jurisdictions where ‘definitions relate to particular points of arising and are often framed in relation to specific environmental controls’(Parfitt et al. 2010, pp. 3065–3081) even if it is true that it generally remains ‘a stigmatized Other, [...] to be kept at bay’, which ‘[...] has long been systematically dissociated, separated, and isolated from production, distribution, and consumption, [...] kept away, not merely from eyes and nostrils, but even from awareness and consciousness’(Corvellec 2015, p. 12). With the exception of such a common feeling though, a general legal definition is missing.

As Fig. 11.1 shows, the closest try can be found within the UN when it established its specialized agency in 1945, the Food and Agriculture Organization (FAO), fixing reduction of food losses within its mandate to tackle the plague of food insecurity. By 1974, the first World Food Conference identified reduction of post-harvest losses as part of the solution in addressing world hunger (FAO 1981). Consequently, it established the *Special Action Programme for the Prevention of Food Losses*. The main focus was initially on reducing losses of durable grain; by the early 1990s, the scope of work had been broadened to cover roots and tubers, and fresh fruits and vegetables (FFVs). Poor adoption rates for interventions led to the recognition that a purely technical focus was inadequate for solving problems within the sector and a more holistic approach was developed (FAO 2002). There has been no account of progress towards the post-harvest loss reduction target, since in 2011, FAO asked the Swedish Institute for Food and Biotechnology (SIK) to update data in order to determine a more recent situation profile (Gustavsson et al. 2011). Finally, within the Swedish study (at p. 2) a specific

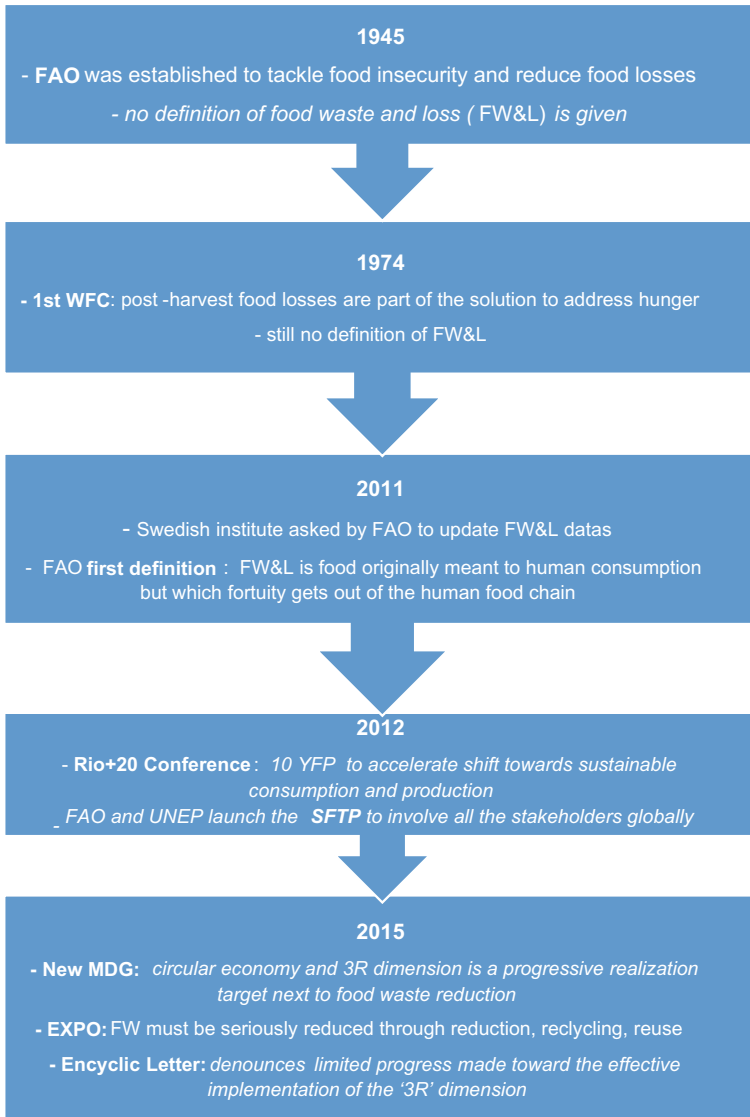


Fig. 11.1 Most relevant phases in the attempt to define food waste in the international context

definition of food waste was given, distinguishing ‘*planned non-food uses to unplanned non-food uses*, which are hereby accounted under losses’, implying therefore that ‘food that was originally meant to human consumption but which fortuity gets out the human food chain is considered as food loss or waste even if it is then directed to a non-food use (feed, bioenergy...)’ (Gustavsson et al. 2011, p. 2). In the Swedish Study there was no specific reference to the challenging

opportunity for ‘food got out of the human food chain’ to be reused and recycled in order to contribute to circular economy efficiency; the analysis was ending in defining the visible dimension of such ‘Other-than-edible-food’ as waste and loss, being the main focus, as it has been already mentioned, to reduce food insecurity.

Nonetheless, in just few years, approaching the 2015 checkpoint for the *Zero Hunger challenge* set in the Millennium Development Goals (MDG), the same concept of ‘the right to *adequate* food’ included in the binding 1966 International Covenant on Economic Social and Cultural Rights (ICESCR) has been developed broadly as to include *sustainability*. Article 11(2)(a), in fact, recognizes the fundamental right of every individual to be free from hunger and the duty of the State to adopt, individually and through international cooperation, all the measures deemed to be necessary as to assure this right through the improvement of food production and the conservation and distribution methods, using the *most* advanced technical and scientific know-how and implementing those reforms of the national agricultural systems required to obtain *the best degree of development and employment of resources* (Snyder 2006, Van der Meulen 2010, Ricci 2013).

Such a holistic vision of sustainability to be assured through the entire food chain had been re-elaborated recently after the Rio+20 Conference which reaffirmed that sustainable consumption and production is a cornerstone of sustainable development within the *10-Year Framework of Programmes on Sustainable Consumption and Production Patterns* (10YFP).² This is a global framework of action to enhance international cooperation to accelerate the shift towards sustainable consumption and production (SCP) in both developed and developing countries. The framework supports capacity building, and facilitates access to technical and financial assistance for developing countries for this shift. The 10YFP ‘aims at developing, replicating and scaling up SCP and resource efficiency initiatives, at national and regional levels, decoupling [...] economic growth from the rising rates of natural resource use and the environmental impacts that occur in both consumption and production stages of product life cycles’. Sustainable food systems are key to ensuring sustainable development; thus UNEP and FAO, within the 10YFP initiative, building on previous work under the so called Agri-food Taskforce, jointly developed the Sustainable Food Systems Programme (SFSP). The two organizations conducted a global survey on SFSP during June-July 2014. This was a public consultation widely disseminated among stakeholders and open to all. It included general questions regarding the proposed goal for the SFSP, challenges, opportunities and key issues for making food systems more sustainable as well as an invitation to express interest to participate in the programme.

²See the Resolution 67/203 adopted by the General Assembly on 21 December 2012, Implementation of Agenda 21, the Programme for the Further Implementation of Agenda 21 and the outcomes of the World Summit on Sustainable Development and of the United Nations Conference on Sustainable Development; the Resolution 68/210 adopted by the General Assembly on 20 December 2013, Implementation of Agenda 21, the Programme for the Further Implementation of Agenda 21 and the outcomes of the World Summit on Sustainable Development and of the United Nations Conference on Sustainable Development.

Such a globally shared vision has been confirmed recently during the EXPO2015, on the occasion of the adoption of the post-2015 development agenda. On 25th September 2015, the UN announced the seventeen *Sustainable Development Goals* (and 169 targets) that should ‘build on the *Millennium Development Goals* and complete what they did not achieve’; the General Assembly states clearly that ‘they are integrated and indivisible and balance the three dimensions of sustainable development: the economic, social and environmental’ (see the third indent of the Preamble). The challenges and commitments identified at preceding major conferences and summits, held since the 1992 *Rio Declaration on Environment and Development*, are recognized as being interrelated requiring a new approach and integrated solutions, given that

Sustainable development recognizes that eradicating poverty in all its forms and dimensions, combating inequality within and among countries, preserving the planet, creating sustained, inclusive and sustainable economic growth and fostering social inclusion are linked to each other and are interdependent’ (para. 13) (UN 2015).

Within the Declaration the ‘3R’ dimension of the circular economy firstly appears among the progressive realization targets, next to food waste reduction. In fact, under goal twelfth, entitled ‘Ensure sustainable consumption and production patterns’, all countries and all stakeholders, acting in collaborative partnership, commit themselves not only to

‘halve *per capita* global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses’ (target no. 12.3), but also to ‘substantially reduce waste generation through *prevention, reduction, recycling and reuse* (target no. 12.5) (UN 2015)

To this extent, on the private perspective, companies, especially large and multinationals, are encouraged to adopt sustainable practices and to integrate sustainability information into their reporting cycle (target 12.6), while on the public perspective, public procurement practices that are sustainable, in accordance with national policies and priorities, should be promoted (target 12.7). The same approach is visible in the *Milan Charter* and its annexes, presented to Kofi Annan at the very end of October as the legacy of EXPO2015,³ affirming that whenever food is not re-usable for human consumption it is important to think to food as a new source not only for bio-energy production but also for diversified markets, recommending a ‘use-not-waste’ strategy for future food policies. The serious urgency in ‘counteracting’ the currently prevailing ‘throwaway culture’ is specifically addressed also in the 2015 *Laudato Si*’ Encyclical Letter, where the limited progress made toward the effective implementation of the ‘3R’ dimension are expressly denounced since globally

³See the Report elaborated by a specific working group, the no. 15, focused on ‘Vietato sprecare’ (i.e., ‘waste prohibited’) visible at <http://carta.milano.it/wp-content/uploads/2015/04/42.pdf>).

[...] we have not yet managed to adopt a circular model of production, capable of preserving resources for present and future generations, while limiting as much as possible the use of non-renewable resources, moderating their consumption, maximizing their efficient use, reusing and recycling them (Pope Francis 2015 points 20–22).

11.4 Food Policy and Waste Proliferation in EU

Examining European food law and policy, it can be found they surely had a not irrelevant role in the increasing production of food waste.

EU food policy developed over three major phases, that can be labelled as the internal market phase, the social phase and, nowadays, the sustainable development phase, moving from a technocratic approach to a multi-levelled often participatory policy space.

For a long time, European Law considered food just as a good: free movement was the target to be achieved. After the famous decision *Cassis de Dijon* (Case n. 120/1978), the principle of mutual recognition effectively opened national markets, obtaining through equivalence the result that previously could not be obtained through legislative harmonization. It was applied to objective characteristics of food products and progressively extended to the use of names. Even the jurisprudence of the Court of Justice shows this approach, aiming at privileging the circulations of food products through the European Market. Unfortunately though, measures for harmonization in free movement of goods and services are likely to restrict the Member States' regulatory powers to protect environment. As recently shown (de Sadeleer 2014), there is an awkward relationship between environmental and market issues, and the principle of integration of environment protection across EU policies (Allena and Fracchia 2011) implies a high level of protection and improvement of the existing regulatory framework.

By the end of the '80s with the *Smanor* judgement on yogurt (Case n. 298/1987), a new approach stresses the importance of valorising quality of food and peculiarity of different products, even if environmental protection is not at stage yet.

Technological innovation has played a decisive role in bringing about a radically different relation with food (Albisinni 2014). Change has come about both in the quantity of food provisioning and in the quality of the processing, conservation and logistics of food stuffs.

As well, crisis-such as BSE, dioxin, horse meat or, even recently, cucumber played an important role in developing a different sensibility for health protection.

We come, then, to what I called the social approach, as food is not merely a good in the market. It is therefore necessary to adopt measures aimed at guaranteeing that unsafe food is not placed on the market and at ensuring that systems exist to identify and respond to food safety problems in order, not only, to guarantee the proper functioning of the internal market, but also, to protect human health. This new demand calls for a proper risk regulation which comes with Regulation No. 178/2000, the *General European Food Law*, establishing EFSA (European

Food Safety Authority) (Abels et al. 2014) and covering a wide range of provisions with a direct or indirect effect on the safety of food and feed, including provisions on materials and articles in contact with food, animal feed and other agricultural inputs at the level of primary production.

Nevertheless, food security and safety policies played and play an important role in waste proliferation. Aesthetic defects and quality standards affect the level of food waste, as out-graded vegetables and fruits cannot be sold.

Furthermore the discard rate is seriously increasing as consumers become more and more exigent on features and aspect of food. As well, provisions on food safety and security often require proper storage facilities either safe transportation conditions or particular packing proceedings, which are not always available or too expensive for small producers.

Even quantitative restrictions in production and commerce of agricultural products played and still do play a not minor role. The regulatory framework of the common agricultural policy (CAP) contains instruments and measures which surely influence the waste production, although agricultural issues and waste issues are usually discussed in very different contexts.

Procedural rules concern and control, in example, sugar, milk and potato starch quotas, or limit production potential in the wine, oranges or crops sector. Overproduction has significant consequence in food waste: When production exceeds demand, that means surplus crops, oranges and milk will be sold to processors or as animal feed or just thrown away.

Environmental issues and concerns have been progressively addressed within the boundaries of the internal market legal basis, finally acknowledging environmental protection as one of the Community's essential objectives and Article 3(3) of the Treaty on European Union specifically mentions 'the sustainable development of Europe' and a 'high level of protection and improvement of the quality of the environment'. So we come to what we called the *Sustainable development phase*.

The recent Communication from the European Commission, *Towards a circular economy: A zero waste programme for Europe*, goes even further. It proposes a non-binding target for a reduction in food waste of at least 30% by 2025, in addition to the development, inter alia, of national food waste prevention strategies (EC 2014). We turn, now, to the new approach and to the phase, which I call the sustainable development phase.

Loss and wastage occur at all stages of the food supply chain and value chain. A more economically, socially and environmentally sustainable food system in Europe would imply healthier diets, less food waste and the production and consumption-including from imports-of higher-quality food with lower impacts on climate change and biodiversity in particular.

In addition globalization, deriving from the decline of state authority, the increased role of civil society, and the promotion of self-regulatory mechanisms in a decentralized and multipolar society, complicates the legislative framework, assuming a different perspective, as we will see in detail in next paragraphs.

11.5 The New European Approach

In the *Roadmap to a Resource Efficient Europe* (COM (2011) 571 fin.) the necessity of turning waste into a resource is considered as a priority. Without clear definitions, the prospects for making the waste policy operational in any meaningful way could be bleak. The qualification of a substance or a material as a waste implies for the holder the acquisition of a legal status, which leads to a series of obligations (Pocklington 2011). Each involved company/entity/person in the management of the waste must act in a binding and subject to control check manner, under rules of conduct laid down in National and Community legislation, which expose to possible consequences in case of their violation or breach of the principles mentioned pursuant to Art. 191 of TFUE.

The definitional problems get bigger with the implementation of the waste directives as different national perspectives add, to the variety of legislative levels, variety of jurisdictions and variety of contexts for law implementation and law enforcement.

Waste directives apply to the operators of food supply chain, concerning dissimilar industrial activities.

Under the *Waste Framework Directive* (WFD, No 2008/98/EC), though, there is no specific definition of food waste: waste is generally defined as ‘any substance or object which the holder discards or intends to discard or is required to discard’ at Article 3(1). As well known, the previous Directive (No 75/442/EEC) was amended in 1991 with the addition of ‘categories of waste’ (Annex I) and the omission of any reference to national law. This was not really helpful in defining waste and therefore the new Directive changed the approach.

Article 2 excludes a number of categories from the scope of the directive, such as the gaseous effluents emitted into the atmosphere. Moreover Art. 2(2) contain an exception from categories insofar as these are covered by other EU legislation. That means, as concerning food waste, the directive does not apply to Biomass as Art. 2, lett. b) of dir. 2001/77/EC defines *biomass* as the biodegradable fraction of products, waste and residues from agriculture (including vegetal and animal substances), forestry and related industries, as well as the biodegradable fraction of industrial and municipal waste. Regarding food waste and considering the whole food chain, Article 2(1)(f) WFD excludes, as well,

faecal matter, if not covered by paragraph 2(b), straw and other natural non-hazardous agricultural or forestry material used in farming, forestry or for the production of energy from such biomass through processes or methods which do not harm the environment or endanger human health.

The Court of Justice has addressed the point on the exact meaning of waste on numerous occasions.

The *ARCO Chemie Nederland/Epon* (Cases C-418/97 and C-419/97) underlined that the concept of waste is to be interpreted broadly in the light of the Framework Directive’s objective of ensuring a high level of environmental protection. Defining the term *discard* has been proven particularly difficult. In *Vessoso and Zanetti*, at

first, confirmed in *Tombesi*, the Court ruled that the system of supervision and control established by the directive is intended to cover all objects and substances discarded by their owners, even if they have a commercial value and are collected on a commercial basis for recycling, reclamation or re-use. Only the CJ's judgments can help in establishing the boundaries of the concept of waste even if the CJ does not establish general principles, but simply decide single cases referring to similar precedents.

In the end, one major problem remains: it is still not clear what is the correct interpretation of *to discard* (Jans and Vedder 2012). In order to restrict the field, the WFD introduced the definition of by-product, which is not a waste as stated in a number of previous ruling of CJEU (*Palin Granit*, Case C-9/00 and *Saetti*, Case C-235/02). According to Article 5, a substance resulting from a production process the primary aim of which is not the production of that substance may not be waste, but a by-product if the following cumulative conditions are met:

- Further use of the substance or object is certain
- The substance or object can be used directly without any further processing other than normal industrial practice
- The substance or object is produced as an integral part of a production process
- Further use is lawful, i.e. the substance or object fulfils all relevant product, environmental and health-protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

This definition equally refers to general terms and concepts which again called for intervention of the CJ's jurisprudence and of the European Commission, adopting a Communication on waste and by-products.

The interpretative Communication (COM(2007)59 fin.) tried to establish a clear distinction between materials that can be considered as non-waste by-products and those that should be treated as wastes. 'In reality, there is not a black and white distinction, but rather a wide variety of technical situations with widely differing environmental risks and impacts and a number of grey zones' (Keele 2001).

The Community approach on waste management is founded on the fact that a balance must be struck between the need to ensure the functioning of the internal market, on the one hand, and to attain a high level of environmental protection, on the other. If a successfully balance is reached, the Community's waste management can contribute significantly to the pursuit of sustainable development, the Commission noting that 'waste production is one of the best indicators of our progress' towards this goal (EU Focus on Waste Management 1999).

The Commission talks in terms of hierarchy of aims in waste management with prevention being the priority, followed by recovery and then lastly by safe disposal. Specifically, the Community's waste management policy is underpinned by 3 keys objectives. First of all, prevention: the most effective manner in which to eradicate or reduce the impact of waste on environment and human health is to prevent waste being generated in the first place. This can be achieved *inter alia* by using clean technologies, prohibiting or limiting dangerous substances in products, improving

consumer information and providing education. Waste prevention as a priority clearly underlines the need to integrate environmental concerns into the production process. Secondly, the recovery (which contains preparing for re-use; recycling and other recovery). In the event the waste is unavoidably generated, it should be recovered. In this way material can be re-used, or alternatively, waste can either be recycled (material recovery) or utilised as a source of energy (energy recovery). Finally, safe disposal of waste is admitted only when unavoidable.

The choice is not however to be determined exclusively on environmental grounds-while the best environmental solution should be considered, account should also be taken of economic and social costs.

If a material is not a waste, this does not mean that it falls completely out of the system of environmental protection set down in Community law. Product based regulation, and other legislation such as the *REACH Regulation* aim at protecting human health and the environment from the potential environmental impacts of products and other materials that are not wastes.

In the waste policy, as synthetically resumed, there is not though a specific consideration for food waste, neither the definition of waste finds a peculiar declination for materials coming from the food chain.

Nevertheless, the European Commission seems taking the issue of tackling food waste very seriously, even without a clear definition of food waste. And that, in our opinion, is a weak point that can prejudice all the given efforts and good purposes.

The Commission is analyzing in close cooperation with industry, consumer and other NGOs, food sector experts and Member State policy experts how to reduce food waste without compromising food safety and it is discussing options for possible EU actions.

The Commission is itself contributing to awareness raising on food waste prevention through production of communication materials. If all these initiatives can move social opinion or consumers behaviors, EU will not achieve the ambitious target of reducing food waste without a clear regulation and a definition of food waste valid for all the Member States.

In 2010, the European Commission set up the High Level Forum for a Better Functioning Food Supply Chain with the aim of assisting the Commission with the development of industrial policy in the agri-food sector by: following the recommendations of the High Level Group on the competitiveness of the Agro-Food Industry (HLG); and implementing the initiatives set out in the 2009 Communication *A better functioning food supply chain in Europe*.

In particular, the HLG recognised the importance of a holistic approach to ensuring the competitive position of the EU's agri-food sector. It acknowledged the need for consistency between all policy areas affecting the EU food chain: agriculture, food safety, nutrition and health, environment, trade, financial markets, research and innovation, and industrial policy more generally. In the meantime, the major factors determining the competitiveness of the whole food supply chain have been analysed extensively.

In 2011, the Commission's *Roadmap to a resource-efficient Europe*,⁴ identified food as a key sector where resource efficiency should be improved and called for ambitious action to tackle food waste.

In 2014, the Commission's Communication *Towards a circular economy: a zero waste programme for Europe*, and the related legislative proposal to review recycling and other waste targets put forward objectives for food waste reduction in the EU. It included a proposal for Member States to develop national food waste prevention strategies with the aim of reducing food waste by at least 30% by 2025. Sectors concerned included: manufacturing, retail/distribution, food service/hospitality and households.

In its 2015 work programme, the Commission has announced that it would withdraw its legislative proposal on waste targets and replace it by end of year with a new, more ambitious proposal to promote circular economy. Withdrawal of the proposal was formalised following consultation of the European Parliament and Council.

The Commission reflected on the scope of the new proposal to promote circular economy including actions to prevent food waste. In order to help inform its work, the Commission has launched a public consultation inviting contributions from citizens, organizations and public authorities. The consultation closed on 20 August 2015.

In December 2015, with the Communication COM (2015) 614 final *Closing the loop*, the Commission formulated the proposal for amending the *Waste Framework Directive*, but yet the proposal does not contain a proper definition of food waste.

The concept of food waste can be found at Art. 9 which is dedicated to *the Prevention of waste*, saying that:

1. Member States shall take measures to prevent waste generation. These measures shall: [...] reduce the generation of food waste in primary production, in processing and manufacturing, in retail and other distribution of food, in restaurants and food services as well as in households

Still no definition is offered by the legislator, even if food waste is supposed to occur across the entire food supply chain, from the agricultural production stage to the storage, processing, distribution, management and consumption stages. The Commission states it 'will elaborate a common EU methodology to measure food waste in close cooperation with Member States and stakeholders'. The EU is committed to meeting the target of halving per capita food waste, but it is difficult to measure food waste missing the definition of what is considered food waste.

⁴COM (2011) 571 fin., 20 September 2011.

11.6 Food Waste in National Law

If we now turn to the national perspective, defining food waste becomes a central issue.

In this Multilevel System, National Law cannot be considered in isolation, but must be read and understood in interaction with the broader policy.

Furthermore, especially in environmental provisions, hard law gives way to built-in flexibility; horizontal regulation is preferred to hierarchical systems. It is axiomatic that the effectiveness of legal norms will depend in part at least on extent to which they are effectively enforced (Craig and de Burca 2007) and only clear provisions can be effectively enforced.

As a result of an EU policy in favour of subsidiarity, EU environmental law consists more of directives, and more specifically framework directives, than regulations. The provisions of these framework directives are mostly worded in very general terms, whilst regulations may be extremely precise. Therefore Member State authorities have broad discretion in the choice of form and appropriate means for implementing EU law.

In tolerating—let alone encouraging administrative diversity, these directives keep uniformity at bay. Clearly, the extent of such a discretion compounds the difficulties faced by the European Commission in verifying the compliance of EU environmental law in 28 Member States (de Sadeleer 2014, p. 195).

That is what we observed going through the waste legislation and lastly with the Waste Framework directive (Tromans 2001).

In the previous paragraph we saw the ECJ, instead of establishing an exhaustive definition, has placed the onus on national courts to determine on a case-by-case basis whether or not a substance should be regarded as waste, and accordingly made subject to relevant regulatory standards. In this sense, the ECJ has favoured the need for environmental protection at the risk of distorting the functioning of the internal market.

Whilst is evident that a broad definition of waste is envisaged, a lack of clarity as to its precise meaning continues to provide difficulties in national implementation of the directive.

The definitions of disposal and recovery operations contained in the Waste Framework directive are general and leave a relatively substantial leeway for interpretation which can be used to undermine obligations for waste destined for disposal by sending this waste to operations which may or may not be recovery operations, as the Commission itself states (Communication from the Commission: Towards a thematic strategy on the prevention and recycling of waste. COM (2003) 301 final, p. 20).

Furthermore, a lack of legal clarity under EU law regarding the distinction between waste and non-waste could hinder the efficient use of by-products. Even the Guidelines on the interpretation of key provisions of Directive 2008/98/EC—guidelines which are not legally binding, but adopted by the DG Environment in July 2012 in order to clarify key concepts—testify the numerous questions raising

from the interpretation and implementation by national authorities and private economic operators. Nevertheless they do not solve all the present problems.

These implementation problems and criticism by various stake holders have materialised in litigation both at European and national level as subsidiarity and proportionality leaves spaces to national Authorities in implementing directives.

We do not have to forget that failure to fulfil obligations under the Directives of waste involves financial penalties, as happened in Italy for the waste management in the region of Campania, penalties recently confirmed by the Court of Justice, case C-653/13. Furthermore national provisions, considering, in example, Italian legal system, establish administrative and criminal penalties for treating substances and materials without the authorization of waste management.

Those consequences show how central the definition of waste is for the responsibility and liability in waste treatment and management and how this uncertainty influence even business choices introducing risks and unsolvable doubts.

The inability of the Community Institutions to provide a clear and unambiguous definition of waste has forced operators to a frantic search of the requirements that allow to evade the general administrative regime for treating the substance they are dealing with. Public authorities and judges have generally discouraged such initiatives, convinced that the policy of *all waste* was the most appropriate to ensure effective environmental protection and to prevent circumvention of the discipline. They did not realize that-on the other hand-the increasing amount of the mass of the materials to be disposed of as waste makes it much more difficult to ensure an efficient supervisory activity for the real and proper waste (Dell'Anno 2013).

The debate about the definition of waste is likely to continue, but it must be kept in mind the definition of waste is a legal construction which it may well be possible to improve and that clarification especially for food waste is a fundamental step to let food chain operators be capable of planning the best practices and methods to treat their residues in the production.

Waste legislation is often transposed in a highly decentralised manner in Member States, including on the regional or local level and in multiple legal acts, depending on the administrative structures of the Member States.

The risk of incorrect transposition and implementation of the Directive, complicate the Commission's task of monitoring the application of EU law. Clear information with respect to the transposition of the revised waste Directives is instrumental in ensuring the conformity of national legislation with their provisions (COM (2014) 397 final).

Lacking a European definition of food waste Member States have started adopted their own.

In example in United Kingdom the Waste and Resources Action Programme (WRAP) has defined food waste as 'all food and drink discarded throughout the entire food chain'. This definition confirms countries, in the European, area do not care about food waste with the scope of reducing food hunger and malnutrition, but aim at reducing the environmental impacts of food waste applying the circular economy to the food sector.

Recently, in France as well supermarkets will be banned from throwing away or destroying unsold food and must instead donate it to charities or for animal feed, under a law set to crack down on food waste.

The French law goes even further than the UK, where the government has a voluntary agreement with the grocery and retail sector to cut both food and packaging waste in the supply chain, but does not believe in mandatory targets.

11.7 Conclusion

The distinction between waste, by products and end of waste is a key issue in the Circular Economy Package, if we want that food waste, or even generally, waste reduction is not a political slogan but a legal rule (de Sadeleer 2014).

There is an inherent and evident difference in the definition of food waste: food waste can be the all food discarded in the entire food chain, as provided by WRAP, or food wasted just at the point of consumption, as in the FAO provisions. Food waste must be food still perfectly edible, which, in the absence of any alternative use, is eliminated or disposed of or European policy have the target to reduce food waste and loosen through the all food supply chain?

In the idea of circular economy distinguishing what is waste and what is not waste is, of course, a prerequisite for adopting legislative measures. Food waste in this circular economy approach refers not only to discarded or unused edible food, but fits to the all food supply chain, considering all its steps. Turning food waste into a resource is an essential part of increasing resource efficiency and closing the loop in a circular economy: food can become waste through the all the phases of the supply chain.

The establishment of specific food waste targets for Member States, as part of the waste prevention targets to be reached by Member States, call for a clear definition of waste, with a particular attention for biofuels and bio waste.

The Commission aims to facilitate ‘the clustering of activities to prevent by-products from becoming wastes (industrial symbiosis)’. Therefore a clear and univocal definition of waste, distinguishing by products, is a key issue in order to let the policy be effectively.

Only through collaboration on scientific activities, through greater dialogue and effective communication, through shared activities and shared best practices by the scientific organisations and institutes across Europe, the common necessity of a clear definition of food waste could be satisfied.

The definition must keep in mind the different ingredients of food waste, preparing a general directive for all food waste so that all the different food chain operators have a clear idea of what they can do with the different discards they have to manage with.

References

- Abels G, Kobusch A, Trasch J (2014) Scientific regulatory cooperation within the EU: on the relationship between EFSA and national food authorities. In: Alemanno A, Gabbi S (eds) *Foundations of EU food law and policy. Ten years of the European food safety authority*. Ashgate Publishing Limited
- Aginam O (2006) Food safety, South-North asymmetries and the clash of regulatory regimes. (2006/07) *VJTL* 40.4:1099–1111
- Albisinni F (2014) Food law and innovation in European Law. In: *Studi in onore di Luigi Costato*, vol II. Napoli, p 3
- Allena M, Fracchia F (2011) Globalization, environment and sustainable development, in global, European and Italian perspectives. *Riv It Dir Pubbl Com* 781
- Baldwin R, Cave M, Lodge M (2012) *Understanding regulation, theory, strategy and practice*. Oxford, p 373
- Bell S (1999) Refining the definition of waste. 1 *ELR* 2, 283
- Bruno F (2010) Environmental issues in food law. In: *Studi in onore di Luigi Costato*, vol II. Napoli 2014, p 115
- Cheyne I (2002) The definition of waste in EC law. 14 *JEL* 1 61
- Chyau J (2009) Casting a global safety net—a framework for food safety in the age of globalization. *FDLJ* 64, 313 et seq
- Craig P, de Burca G (2007) General editors' preface. In: Wenneras P (ed) *The enforcement of EC environmental law*, Oxford
- Davies PGG (2004) *European Union Environmental Law. Ashgate, An Introduction to Key Selected Issues* 217
- de Sadeleer N (2014) *EU Environmental law and the internal market*. Oxford
- Dell'Anno P (2013) *Disciplina della gestione dei rifiuti*. In: *Trattato di diritto dell'ambiente vol II*. Padova, pp 162, 179–180
- FAO Statistics Division (1981) *Food loss prevention in perishable crops*. FAO Agric Serv Bull no. 43
- FAO (2002) *Post-harvest losses: discovering the full story. Overview of the phenomenon of losses during the post-harvest system*. FAO, Agro Industries and Post-Harvest Management Service, Rome
- Fracchia F (2010) *Lo sviluppo sostenibile, La voce flebile dell'altro tra protezione dell'ambiente e tutela della specie umana*. Napoli
- Gonzalez Vaqué L (2015) Food loss and waste in the European Union: a new challenge for the food law? *Eur Food Feed Law Rev* 20
- Gustavsson J, Cederberg C, Sonesson U, van Otterdijk R, Meybeck A (2011) *Global food losses and food waste. Extent, causes, prevention*. Rome
- Corvellec H (2015) *New directions for management and organization studies on waste, GRI-rapport 2015: 3, Managing Big Cities*
- Jans JH, Vedder HHB (2012) *European environmental law*. European Law Publishing, p 476
- Keele H (2001) When does waste cease to be waste. 12 *ELR* 1, 3
- Kramer L (2003) The distinction between product and waste in community law. 2 *Env Liab* 1:3
- Lundqvist J, de Fraiture C, Molden D (2008) *Saving water: from field to fork—curbing losses and wastage in the food chain*, in *SIWI Policy Brief*. Stockholm
- Mariani, MT (2007) *The intersection of international law, agricultural biotechnology, and infectious disease*. Leiden-Boston
- Negri S (2009) Food safety and global health: an international law perspective. *Glob Health J* III.1, 1 et seq
- Parfitt J, Barthel M, Macnaughton S (2010) Food waste within food supply chains: quantification and potential for change to 2050. *Philos Trans R Soc B* 365:3065–3081
- Pocklington D (2011) *The law of waste management*. Sweet and Maxwell, London

- Pope Francis (2015) Encyclical letter 'Laudato Si' of the Holy Father Francis on Care of Our Common Home', 24 May 2015, points 20–22
- Poto M (2008) Regulations on food safety and the role of African actors in the global arena. *J Afr Int Law* 1.1:107–130
- Ricci C (2013) International law as a meta-framework to protect the right to food. In: Lupone A, Ricci C, Santini A (eds) *The right to food toward a global governance*. Torino, p 9 et seq
- Sunstein CR, Reisch LA (2014) Automatically green: behavioral economics and environmental protection (September 19, 2013). *Harvard Environ Law Rev* 38(1)
- Snyder F (2006) Toward an international law for adequate food. In: Mahiou A, Snyder F (eds) *La sécurité alimentaire/food security and food safety*. Leiden-Boston, p 79 et seq
- Tromans (2001) EC waste law—a complete mess? 13(2) *JEL* 133
- van der Meulen B (2010) The global arena of food law: emerging contours of a meta-framework. *Erasmus L Rev* 3.4, 217 et seq
- UN (United Nations) (2015) Transforming our world: the 2030 agenda for sustainable development. Resolution adopted by the general assembly on 25 A/RES/70/1. United Nations, Geneva