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## Fighting against Food Losses and Waste: An EU Agenda

by Daniele Fattibene and Margherita Bianchi

### ABSTRACT

The extremely unequal distribution of food worldwide has generated a paradox: while almost a billion citizens do not have access to healthy food, a part of the global population can afford to buy food in excess and – more importantly – generate enormous food losses and waste (FLW), with high economic, environmental and social costs. The EU has been working to find a comprehensive solution to this problem, with the aim of changing the current paradigm that tolerates good food being allowed to rot away. This paper explores the opportunities deriving from the latest EU efforts against FLW and, in particular, the Circular Economy Package, which includes waste legislation that is in line with UN goals on sustainable development. Several gaps have yet to be filled, but the mix of ambitious European and domestic laws, virtuous practices on the part of private companies, and a radical change in consumers' habits are key to giving back to food the value it deserves.

*Food security | Food waste | European Union | France | Italy*



## Fighting against Food Losses and Waste: An EU Agenda

by Daniele Fattibene and Margherita Bianchi\*

### Introduction

One of the most dramatic phenomena that our society seems to have sadly got used to is the highly unfair distribution of food worldwide. While a part of the global population can afford to buy and – most importantly – waste food, almost a billion citizens still do not have access to it. This has pushed several international as well as non-governmental organizations (NGOs) to identify strategies to reduce the so-called food losses and waste (FLW). The Milan EXPO 2015 gave greater visibility to food security, as well as the environmental, economic, security and social variables linked to it. It also provided a great push for the approval of ambitious laws in the European Union (EU), in particular in France and Italy.

The EU in recent years has turned into one of the strongest advocates of this battle, which needs to be fought on various levels: political, economic, normative and cultural. Drawing on the 12th Sustainable Development Goal (SDG) set by the United Nations (UN),<sup>1</sup> the EU has begun to set up a series of initiatives to tackle FLW, being aware that improving access to the food supply chain, as well as reducing its inefficiencies, could lead to several beneficial effects for global food security. Yet, institutional steps are not enough if they do not involve other actors such as activists, consumers and private companies.<sup>2</sup> Against this backdrop, the EU's agenda on FLW is part of a wider attempt to set up a circular economy, with a proposal for a Directive started by the European Commission in 2015 and currently under discussion between the European Parliament (EP), the Council and the Commission.

<sup>1</sup> See the UN Sustainable Development website: *Goal 12: Ensure Sustainable Consumption and Production Patterns*, <http://wp.me/P5Mdaw-3k>.

<sup>2</sup> Jenny Gustavsson et al., *Global Food Losses and Food Waste. Extent, Causes and Prevention*, Rome, FAO, 2011, p.10-14, <http://www.fao.org/in-action/inpho/library/detail/en/c/2364>.

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The paper is divided into four sections. The first section introduces FLW, showing some initial attempts to estimate its economic, environmental and social costs. The second offers an assessment of the EU's Circular Economy package. The third proposes a comparative analysis of the two countries (France and Italy) that have so far launched the most innovative laws to reduce FLW. Finally, the last section presents the main critical points highlighted by the different stakeholders interviewed and indicates some topics that future research will need to concentrate on.

### 1. Defining and estimating the costs of food losses and waste

According to the UN, each year 1.3 billion tons of food is wasted “while almost 1 billion people go undernourished and another 1 billion hungry”.<sup>3</sup> This disproportionate distribution of food requires action from the global community, especially from the most developed countries, which are wasting more food on a per capita basis. The causes of FLW are different across states and regions.

**Figure 1** | The causes of food losses and waste: high-income vs. low-income countries



Medium-high income countries tend to generate FLW as a consequence of consumers' habits (i.e., lack of knowledge about food labelling), as well as the mis-coordination among the different actors all along the food supply chain (i.e., farmers' agreements, quality standards,<sup>4</sup> etc.). Food has progressively lost its

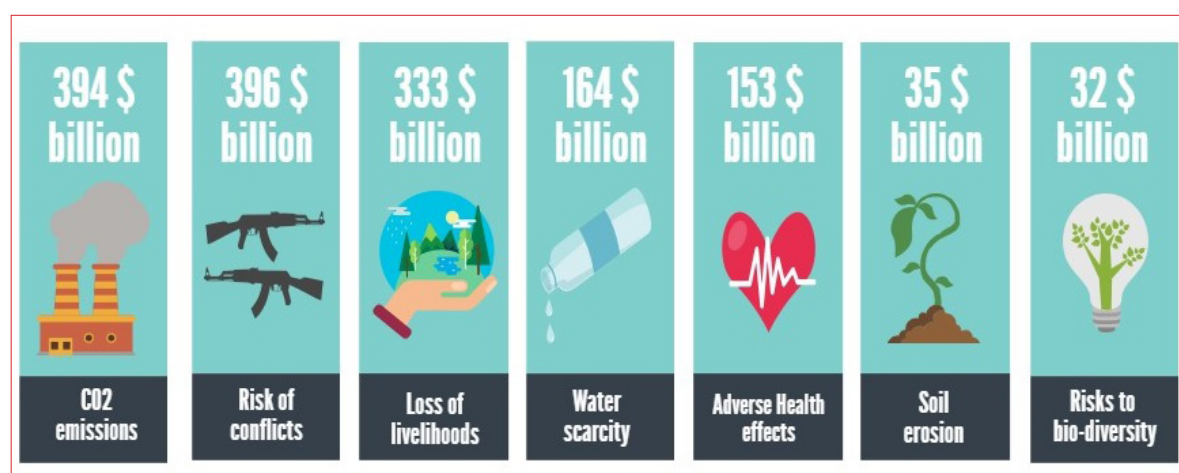
<sup>3</sup> UN Sustainable Development website: Goal 12, cit.

<sup>4</sup> These requirements regard for instance the size and shape of fresh fruit and vegetables in particular, which often cause many unnecessary discards.

value, and its decreasing price as a percentage of income (which fell from 30 to 10 percent in the last decades) generates FLW at the household and catering levels.<sup>5</sup> By contrast, FLW in developing countries is mostly caused by a combination of financial and managerial weaknesses in harvesting, storage, packaging, transportation and marketing systems.<sup>6</sup> Hence, a "one-size-fits-all" approach to tackle FLW is not effective, and instead country-tailored strategies need to be implemented. In medium-high income countries, top-down processes must be coupled with a cultural change in consumers' attitudes, as well as alternative food production strategies. Conversely, in low-income countries, investments in infrastructure, storage and packaging are essential.

FLW has a deep impact on our society, not only economically, but also due to the related environmental and social costs. A pioneer study by the Food and Agriculture Organization (FAO) in 2014 attempted to provide a first assessment of such costs.

**Figure 2** | Environmental and social costs of food losses and waste



Source: FAO, *Food Wastage Footprint. Full-cost Accounting*, cit., p. 7.

FAO estimated that the total cost of global FLW is around 2.6 trillion dollars, of which 1 trillion dollars is in economic costs, 700 billion dollars in social costs and 900 billion dollars in environmental costs.<sup>7</sup> Among other issues, FLW is responsible for about 8 percent of total anthropogenic GHG emissions, almost reaching the quantity of global road transport emissions.<sup>8</sup> In addition, FLW produces a strong stress on land resources, accounting for around 30 percent of world's agricultural

<sup>5</sup> European Commission, *Impact Assessment on Measures Addressing Food Waste to Complete SWD (2014) 207 Regarding the Review of the EU Waste Management Targets (SWD/2014/289)*, 23 September 2014, p. 17, <http://ec.europa.eu/environment/eussd/pdf/IA.PDF>.

<sup>6</sup> Jenny Gustavsson et al., *Global Food Losses and Food Waste*, cit., p. v.

<sup>7</sup> FAO, *Food Wastage Footprint. Full-cost Accounting*, 2014, p. 79, <http://www.fao.org/3/a-i3991e.pdf>.

<sup>8</sup> FAO, *Food Wastage Footprint & Climate Change*, 2015, <http://www.fao.org/3/a-bb144e.pdf>; Ralph Sims et al., "Transport", in Ottmar Edenhofer et al. (eds.), *Climate Change 2014: Mitigation of Climate Change*, Cambridge, Cambridge University Press, 2014, p. 622, <https://www.ipcc.ch/report/ar5/wg3>.

land. Finally, FLW has a tremendous water footprint (250 km<sup>3</sup>)<sup>9</sup> and it threatens biodiversity.<sup>10</sup> Figure 2 visualizes the magnitude of this phenomenon.

Measuring FLW has proven complicated. The reasons range from the lack of data and a commonly shared definition of the phenomenon, to market distortions.<sup>11</sup> The main definitions provided so far all tend to identify FLW as edible material intended for human consumption, that is removed from the food supply chain and which is discarded, lost, degraded or disposed of (including composted, bio-energy production, disposal to sewer or landfill).<sup>12</sup>

The EU-funded FUSIONS project has tried to shed light not only on the definition of FLW, but also on the creation of a methodology to measure it. Using a circular approach, it has assessed the sustainability of the food supply chain, by distinguishing between “food waste” and “valorization” or “conversion” of food and combining both edible and inedible parts of food. Such a methodology has made it possible to identify the sectors contributing the most to FLW in the EU, with households in first place (53 percent) followed by processing (19 percent), retail sector (17 percent) and finally production (11 percent). In 2012 the EU produced 88 million tons of FLW (approximately 173 kg per capita) for a total cost of 143 billion euros.<sup>13</sup> The European Commission further estimates that FLW may rise to 126 million tons by 2020, if preventive actions are not taken.<sup>14</sup>

Table 1 summarizes the percentage of food waste produced in the EU, on the basis of the calculations undertaken by several studies. As we can see, they differ greatly, with high fluctuations registered notably for production and retail sectors.<sup>15</sup>

<sup>9</sup> The water footprint measures the amount of water used to produce each of the goods and services we use. For more information, see the website of the Water Footprint Network: *What Is A Water Footprint?*, <http://waterfootprint.org/en/water-footprint/what-is-water-footprint>.

<sup>10</sup> FAO, *Food Wastage Footprint. Impacts on Natural Resources*, 2013, <http://www.fao.org/docrep/018/i3347e/i3347e.pdf>.

<sup>11</sup> One of the first attempts to assess FLW globally is the Global Food Losses Index launched by FAO. For more information, see FAO website: *Technical Platform on the Measurement and Reduction of Food Loss and Waste*, <http://www.fao.org/platform-food-loss-waste/food-loss/food-loss-measurement/en>.

<sup>12</sup> For a more detailed analysis of the debate on the definition of FLW, see Julian Parfitt, Mark Barthel and Sarah Macnaughton, “Food Waste within Food Supply Chains: Quantification and Potential for Change to 2050”, in *Philosophical Transactions*, Vol. 365, No. 1554 (September 2010), p. 3065-3081, <http://dx.doi.org/10.1098/rstb.2010.0126>; FAO, “Food Loss Prevention in Perishable Crops”, in *FAO Agricultural Services Bulletin*, No. 43 (1981), <http://www.fao.org/docrep/s8620e/S8620E00.htm>; FAO, *Food Wastage Footprint. Impacts on Natural Resources*, cit., p. 8-9; FUSIONS, *Definitional Framework for Food Waste*, 3 July 2014, p. 6, <https://www.eu-fusions.org/index.php/publications/265>.

<sup>13</sup> This figure is not broken down into what is produced in the EU and what is imported. See FUSIONS, *Estimates of European Food Waste Levels*, 31 March 2016, p. 4-5, <https://www.eu-fusions.org/index.php/publications/266>.

<sup>14</sup> BIO Intelligence Service, *Preparatory Study on Food Waste across EU 27*, October 2010, p. 17, <http://dx.doi.org/10.2779/85947>.

<sup>15</sup> Processing and production sectors are the most troublesome to analyse due to the lack of data and the differences in the definition of food waste.

**Table 1** | Share of food losses and waste in the food supply chain (percent)

	FAO (Europe)	Bio Intelligence Service	FUSIONS
Production sector	23	34.2	11
Processing sector	17	19.5	19
Retail sector	9	5.1	17
Consumers	52	41.2	53

Source: European Court of Auditors, *Combating Food Waste: An Opportunity for the EU to Improve the Resource-Efficiency of the Food Supply Chain*, 2016, p. 11, <http://www.eca.europa.eu/en/Pages/DocItem.aspx?did=40302>.

## 2. The EU's actions to tackle food losses and waste

### 2.1 The first steps

The EU has made substantial efforts to create a common framework for tackling FLW.<sup>16</sup> Several institutions are involved in this task at different levels. Within the Commission, DG Health and Food Safety is in charge of the food waste file. Other DGs also deal with this issue as it touches upon a wide range of topics on the EU's agenda, such as climate change or the Energy Union. Moreover, FLW has to do with a variety of policies, including waste,<sup>17</sup> food safety and information, research and innovation, environment, agriculture, education and social policy,<sup>18</sup> involving also producers, processors, retailers and consumers. For these reasons, gaps and overlaps are almost inevitable. An overview of the instruments (both funds and legal provisions) existing at the EU level is summarized in Figure 3.

The Juncker Commission and the EP have worked to bring some clarity to this dynamic – and to a certain extent confusing – picture. Yet, many regulatory gaps and overlaps remain, slowing down the fight against FLW. The Member of the European Parliament (MEP) Biljana Borzan helpfully summarized them in a recent Parliamentary initiative<sup>19</sup> which resulted in an EP resolution voted by the Plenary in May 2017.<sup>20</sup> In particular, the main obstacles to tackling FLW derive from a waste

<sup>16</sup> For an overview of the actions taken at the EU level in the last ten years, see European Court of Auditors, *Combating Food Waste*, cit., p. 51-53.

<sup>17</sup> See the European Commission website: *Directive 2008/98/EC on Waste (Waste Framework Directive)*, <http://ec.europa.eu/environment/waste/framework>.

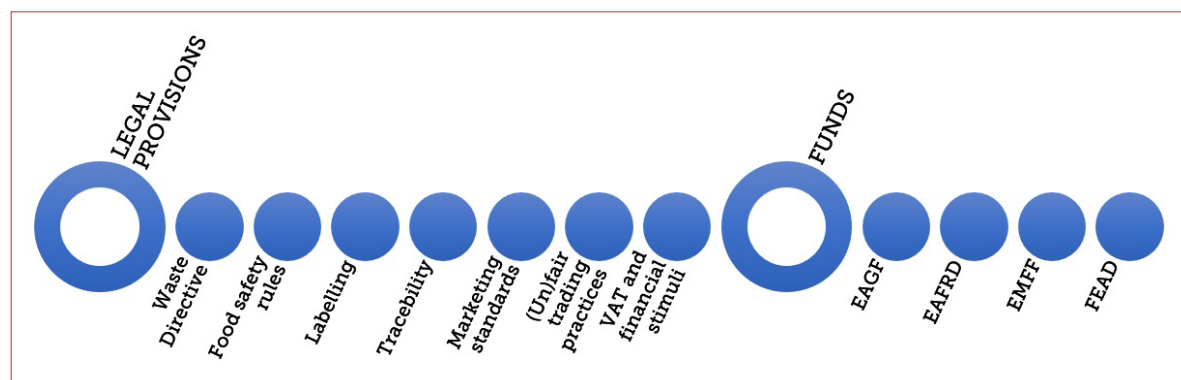
<sup>18</sup> Biljana Borzan, *Draft Report on Initiative on Resource Efficiency: Reducing Food Waste, Improving Food Safety (2016/2223(INI))*, 8 December 2016, p. 8, <http://www.europarl.europa.eu/sides/getDoc.do?type=COMPARL&mode=XML&language=EN&reference=PE595.612>.

<sup>19</sup> Ibid., p. 9.

<sup>20</sup> European Parliament, *Resolution on Initiative on Resource Efficiency: Reducing Food Waste, Improving Food Safety (2016/2223(INI))*, 16 May 2017, <http://www.europarl.europa.eu/sides/getDoc.do?type=TA&language=EN&reference=P8-TA-2017-0207>.

hierarchy not fully applicable to food waste, a chaotic labelling system,<sup>21</sup> a lack of binding targets for food waste reduction, the regulation of VAT exemption as well as incentives for food donation.

**Figure 3** | Overview of the EU funds and legal provisions dealing with food losses and waste



Source: European Court of Auditors, *Combating Food Waste*, cit., p. 51-52.

### 2.2 Launching an EU circular economy

In 2015, the Juncker Commission released a new proposal for a Circular Economy<sup>22</sup> and this is the most relevant opportunity for rebalancing the food supply chain at the EU level. The goal is to shift from the traditional linear scheme based on the “take-make-consume-throw away” pattern, to a circular model which closes the loop, by entirely exploiting different products’ lifecycles. The EU has identified specific measures to tackle FLW waste on some pivotal areas, ranging from the setting up of a common methodology for measuring the phenomenon to the elaboration of effective waste prevention plans to reduce FLW in all sectors involved.

The methodology will be a key instrument for Member States to fulfil reporting obligations, with a crucial role played by the newly established multi-stakeholder Platform on FLW, which builds on the work of expert groups established by the European Commission in the last years.<sup>23</sup> It is supporting all actors in defining

<sup>21</sup> Citizens tend to not know the difference between “use by” and “best before” date. “Use by” date indicates the date up until food can be eaten, hence it is an indicator of safety. “Best before” date refers instead to the quality of food, as it shows that food can still be eaten, though it may lose flavour and texture.

<sup>22</sup> It replaced the July 2014 proposal for a Directive on the so-called “circular economy”. The Juncker proposal consists of an action plan and four legislative proposals, including a text amending the 2008 Waste Framework Directive. FLW is part of this effort.

<sup>23</sup> Among them the Working Group on Food Losses and Food Waste, established in 2012 under the Advisory Group on the Food Chain and Animal and Plant Health, and the Expert Group on Food Losses and Food Waste established in 2014. For more information, see the European Commission website: *Fighting food waste: co-operation with stakeholders*, <http://europa.eu/!Bq94gu>; and *Register of Commission expert groups*, <http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=3189>.

measures needed to prevent food waste, sharing best practices and evaluating progress made over time.<sup>24</sup> Since the launch of the Platform in November 2016, three meetings have taken place.<sup>25</sup> In the next months, the Platform will also play a crucial role in food labelling by better defining the difference between “best before” and “use by” dates (i.e., in some EU countries food cannot be donated if it goes beyond the “best before” date).<sup>26</sup> By the end of 2017 it will adopt the European Commission 2016 Guidelines for the use of former foodstuff as feed.<sup>27</sup>

The Commission’s work<sup>28</sup> goes hand in hand with the activity of the EP. In 2016, the rapporteur of the Commission’s package in the EP, MEP Simona Bonafè, developed the general statements into more detailed and ambitious targets for EU Member States.<sup>29</sup> Included are a broader definition of food waste and a clear binding target to halve food waste by 2030, both at the retail and consumer level. Moreover, the report called to establish agreements letting the retail sector distribute unsold products to charitable organizations, and tightened the timing for the European Commission to present a common methodology, demanding at the same time a set of indicators to assess and compare the results obtained from the different countries.

After an intense debate among all political groups, in March 2017 and by a large majority the EP Plenary adopted Bonafè’s report and compromised amendments on the proposal of the Commission.<sup>30</sup> The most relevant points regarded a more detailed definition of “food waste”,<sup>31</sup> a food waste hierarchy<sup>32</sup> which prioritizes

<sup>24</sup> For the mandate and role of the Platform, see European Commission, *EU Platform on Food Losses and Food Waste Terms of Reference (ToR)*, 26 April 2016, [https://ec.europa.eu/food/sites/food/files/safety/docs/fw\\_eu-actions\\_flw-platform\\_tor.pdf](https://ec.europa.eu/food/sites/food/files/safety/docs/fw_eu-actions_flw-platform_tor.pdf).

<sup>25</sup> A plenary meeting took place in June 2017, whereas two meetings of two sub-groups on food donations and food waste measurement occurred in March 2017. For further details about the agendas and the documents presented during the meetings, see the European Commission website: *Meetings of the EU Platform on Food Losses and Food Waste*, <http://europa.eu/!Pk94Jf>.

<sup>26</sup> The Commission will present the first results of a pilot project on food labelling by the end of 2017.

<sup>27</sup> Wolfgang Trunk, *EU-Guidelines for the Use of Former Foodstuff as Feed*, presentation to the EU Platform Kick-off meeting, Brussels, 29 November 2016, [https://ec.europa.eu/food/sites/food/files/safety/docs/fw\\_eu-platform\\_20161129\\_pres-food-2-feed-guidelines.pdf](https://ec.europa.eu/food/sites/food/files/safety/docs/fw_eu-platform_20161129_pres-food-2-feed-guidelines.pdf).

<sup>28</sup> European Commission, *Report on the Implementation of the Circular Economy Action Plan* (COM/2017/33), 26 January 2017, p. 6, <http://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52017DC0033>.

<sup>29</sup> Simona Bonafè, *Draft Report on the Proposal for a Directive Amending Directive 2008/98/EC on Waste*, 26 May 2016, <http://www.europarl.europa.eu/sides/getDoc.do?type=COMPARL&mode=XML&language=EN&reference=PE580.497>.

<sup>30</sup> European Parliament, *Amendments on the Proposal for a Directive amending Directive 2008/98/EC on Waste*, 14 March 2017, <http://www.europarl.europa.eu/sides/getDoc.do?type=TA&language=EN&reference=P8-TA-2017-0070>.

<sup>31</sup> “Food intended for human consumption, either in edible or inedible status, removed from the production or supply chain to be discarded including at primary production, processing, manufacturing, transportation, storage, retail and consumer levels, with the exception of primary production losses”. Ibid.

<sup>32</sup> The food hierarchy will be the following: source prevention; edible food rescue; organic recycling; energy recovery and disposal.

human consumption over animal feed or the reprocessing into non-food products, the introduction of incentives for application of the food waste hierarchy,<sup>33</sup> a clear reduction target of 30 percent by 2025 and 50 percent by 2030, compared to the 2014 baseline,<sup>34</sup> and a more efficient monitoring system, to be reached through a common methodology to be issued by December 2017. The ambitious goals set by the EP on the legislative directive on waste are currently under discussion within the Council of the EU and individual Member States,<sup>35</sup> and a final decision is expected by the end of 2017 or the beginning of 2018.

### 2.3 An assessment of the EU's actions against food losses and waste

The EU's actions have raised some criticism from several actors. The main disagreements regard measurement of the 50 percent of food which will need to be saved by 2030, an issue which may persist even when Member States eventually agree on a common definition of FLW. NGOs such as food banks ask for a change in rationale of the methodology for measuring FLW. A key qualitative leap would be to stop measuring only the amount of wasted food, and include also what is already saved. This change of mind-set stems from a generalized criticism towards the FUSIONS project, but also from a demand to shift from a uniquely environmentalist approach to a more pragmatic one.

Other NGOs would like to shift from a purely quantitative to a more qualitative definition of FLW, which gives food the value it deserves throughout all the stages of the food supply chain. In particular, they believe that the only way to eradicate FLW is to address it from the very top of the chain, which is during the planning of food production. In many cases, farmers are obliged to produce up to 30 percent more, in order to comply with their contracts, whereas sometimes low market prices do not make harvesting cost-effective, letting a lot of food rot on the ground.<sup>36</sup> In this regard, a major qualitative leap would be both to intervene at the farmers' agreements level and to include FLW produced at the agricultural level in the measurement of FLW.<sup>37</sup> Some estimate that FLW in the primary sector may equate to that produced at the household level.

<sup>33</sup> Among them financial, economic and regulatory incentives, extended producer responsibility schemes, facilitation of food donation and incentives for local authorities.

<sup>34</sup> For a synthetic though comprehensive list of targets, see Silvija Aile, *EU Waste Target Review – State-Of-Play*, presentation to the EU Platform Sub-group on food waste measurement meeting, Brussels, 31 March 2017, [https://ec.europa.eu/food/sites/food/files/safety/docs/fw\\_eu-platform\\_20170331\\_eu-waste-target.pdf](https://ec.europa.eu/food/sites/food/files/safety/docs/fw_eu-platform_20170331_eu-waste-target.pdf).

<sup>35</sup> The proposal is subject to ordinary legislative procedure (former "co-decision").

<sup>36</sup> See European Commission, *Impact Assessment on Measures Addressing Food Waste...*, cit., but also BIO Intelligence Service, *Preparatory Study on Food Waste across EU 27*, cit.

<sup>37</sup> This has clearly emerged in the latest meeting of the EU Platform on food losses and waste. See Bartosz Zambrzycki, *Revised Document on Food Waste Monitoring and Sub-Group on Food Waste Measurement: Update by the Commission*, presentation to the EU Platform meeting of 14 June 2017, [https://ec.europa.eu/food/sites/food/files/safety/docs/fw\\_eu-platform\\_20170331\\_pres-05.pdf](https://ec.europa.eu/food/sites/food/files/safety/docs/fw_eu-platform_20170331_pres-05.pdf). Further developments are inevitably linked to ongoing negotiations on the waste legislation proposal.

A critical voice has been that of the EU Court of Auditors. Far from asking for new legislation or public investments, the Court has called for a stronger coordination of existing policies (i.e., agriculture, fisheries and more generally food security policies) and actors of the food supply chain, the elimination of current obstacles which hamper food donations, and finally more ambitious binding targets for all Member States.<sup>38</sup>

### 3. The fight against food losses and waste: two case studies

France and Italy have made the most innovative normative steps to fight against FLW. In the last two years they have passed new laws which aim both to reduce FLW and to boost food donations. The UK will follow soon, as the Food Waste (Reduction) bill has been under discussion already for a long period. It has very ambitious goals, such as halving FLW per capita in the UK as well as setting up a clear methodology to benchmark industrial waste.<sup>39</sup>

#### 3.1 France

The total FLW generated all along the French food supply chain reaches 10 million tons of products per year. Fruits and vegetables make up the bulk of wasted food products, whose estimated cost is around 16 billion euros, with approximately 15.3 million tons of CO<sub>2</sub> emissions (which accounts for 3 percent of total emissions).<sup>40</sup> The consumption stage is the most responsible for FLW (accounting for 45 percent), followed by retail (29 percent), processing (14 percent) and production (13 percent).<sup>41</sup> On average, 140 kg of food per capita (excluding waste from production) is wasted in France each year.<sup>42</sup>

Faced with these numbers, both politicians and civil society have raised their voice. In particular, in April 2015, Member of the French National Assembly and Delegate Minister for the Agri-food Sector under the Ayrault government, Guillaume Garot, presented a report<sup>43</sup> that proposed the ban on large-distribution wastage, as well

<sup>38</sup> European Court of Auditors, *Combating Food Waste*, cit.

<sup>39</sup> The UK has been very active in recent years in the fight against FLW, not only in terms of projects (notably the five years-long plan WRAP), but also through a strong involvement of the civil society (see in particular the campaigns of Tristram Stuart). For a more detailed analysis of the Food Waste (Reduction) bill, see: Julie Mansuy and Tomaso Ferrando, *Food Waste at Time of Food Poverty: Are the EU and Its Member States Providing Sustainable Legal Solutions?*, 27 April 2017, <https://ssrn.com/abstract=2959297>.

<sup>40</sup> ADEME, *Food Losses and Waste: Inventory and Management at Each Stage in the Food Chain. Executive Summary*, May 2016, p. 7, <http://www.ademe.fr/en/node/169466>.

<sup>41</sup> ADEME, *Etat des lieux des masses de gaspillages alimentaires et de sa gestion aux différentes étapes de la chaîne alimentaire*, May 2016, p. 155, <http://www.ademe.fr/en/node/144858>.

<sup>42</sup> Guillaume Garot, *Lutte contre le gaspillage alimentaire: propositions pour une politique publique* (Garot report), April 2015, p. 8, <http://www.ladocumentationfrancaise.fr/rapports-publics/154000257/index.shtml>.

<sup>43</sup> Guillaume Garot, *Lutte contre le gaspillage alimentaire: propositions pour une politique publique*, cit.

as the obligation to transfer unused food to charitable associations.<sup>44</sup> The report has shed light on a dramatic phenomenon and has been combined with a strong request from civil society, in the form of a petition launched by a municipal councilman in Courbevoie, Arash Derambarsh (*Les Républicains*), who collected hundreds of thousands of signatures.<sup>45</sup> These proposals thus became the basis for adoption of a law on food waste the following year.

The Law No. 138/2016 of 11 February 2016<sup>46</sup> has a very punitive approach, introducing an obligation rather than incentives to donation. The law mainly targets the large distribution sector, as it obliges supermarkets of at least 400 square meters to give unused food close to its due date to charitable organizations, to turn it into animal feed or even to compost it. Hence, supermarkets are required to conclude agreements either with large associations with cold storage rooms (e.g., Caritas), or with small associations run by volunteers that immediately distribute food.

The main innovations enacted under the law are:

- A fee of up to 3,750 euros should supermarkets refuse to conclude agreements with associations that distribute food. Food banks and charities are, for their part, obliged to collect and stock the food in properly hygienic conditions.
- A hierarchy of actions to be put in place to avoid food waste: prevention, recovery of unsold food for human consumption, for animal feed and for energy purposes (art. 1);
- Proposals for information and education for schoolchildren, including a section on the fight against food waste (art. 3).

The rationale of the law was mainly to stop the unacceptable trend of destruction of food beyond its due date by large supermarkets (around 750,000 tons of food per year). However, the law does not take into account the plethora of medium and small actors involved in the food supply chain, that also have an impact. Furthermore, it does not take into consideration that retrieving food for donation requires adequate facilities, in order to comply with rules on hygiene and food safety, but the law does not provide adequate financing to support beneficiary associations, especially those run by volunteers. This may create a paradox, as it may lead to a reduction of the amount of food voluntarily destroyed at the retail sector level, even while having repercussions for charities and the third sector.<sup>47</sup> Finally, the law does not give enough importance to other sectors like education,

<sup>44</sup> Eric de la Chesnais, "Guillaume Garot: 'La lutte contre le gaspillage alimentaire est l'affaire de tous'", in *Le Figaro*, 17 October 2014, <http://www.lefigaro.fr/conjoncture/2014/10/17/20002-20141017ARTFIG00069-guillaume-garot-la-lutte-contre-le-gaspillage-alimentaire-est-l-affaire-de-tous.php>.

<sup>45</sup> See the official blog of Arash Derambarsh, *Gaspillage alimentaire*, <https://www.arashderambarsh.com/gaspillagealimentaire>.

<sup>46</sup> Law No. 138/2016 of 11 February 2016: Loi relative à la lutte contre le gaspillage alimentaire, <https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000032036289>.

<sup>47</sup> Julie Mansuy and Tomaso Ferrando, *Food Waste at Time of Food Poverty*, cit.

R&D, quality standards and food labelling.<sup>48</sup>

### 3.2 Italy

Every year each family in Italy wastes food valued at more than 450 euros, equivalent to 35 percent of fresh products (such as meat, eggs or dairy), 19 percent of bread and 16 percent of fruits and vegetables. The estimated economic cost of FLW is around 12.5 billion euros,<sup>49</sup> which corresponds to 149 kg per capita,<sup>50</sup> higher than in France but still lower than the European average. Moreover, around 1.4 million tons of food is not harvested, which corresponds to around 3 percent of the entire national agricultural production.

Law 166/2016 of 19 August 2016<sup>51</sup> can be considered as the final step of the National Food Waste Prevention Plan (Piano nazionale di prevenzione degli sprechi nazionali – PINPAS), launched in 2013 by the Ministry of the Environment, Land and Sea. The goal of the Italian legislation is two-fold. On the one hand it tries to match needs with surpluses, and on the other it aims to simplify procedures for food donation. The law is the result of an intense dialogue with the third sector and several charitable organizations, and should lead to doubling the amount of surplus food recovered per year from the current 550,000 to one million tons.

The law is intended to support those actors among producers, enterprises, supermarkets or small retailers that are willing to donate but that are discouraged by bureaucratic hurdles as well as heavy costs. Indeed, this new framework does not oblige entities to donate (unlike the French legislation), but it makes the current procedures easier. Municipalities may indeed apply a reduction on the TARI, the Italian waste charge, proportionate to the quantity of goods and products donated. Among the innovations delivered by the law:

- Clarification of the concepts of food waste, food donation, “best before” and “use by” dates;
- The possibility of donating food products with expired “best before” date (i.e., the possibility of donating bakery products after 24h from production, envisaged in art.4);
- The possibility of donating products with labelling errors (art. 3);
- The possibility for authorities to donate confiscated food (art. 6);
- The creation of the Coordination Table within the Ministry of the Environment as a coordination platform with stakeholders (art. 8) and

<sup>48</sup> Ibid.

<sup>49</sup> Coldiretti estimates that 54 percent is lost in consumption, 21 percent in catering, 15 percent in commercial distribution, 8 percent in agriculture and 2 percent in food transformation processes. See Coldiretti, *Consumi: Coldiretti, con sprechi cibo persi 12,5 mld, arriva legge*, 14 March 2016, <http://www.coldiretti.it/News/Pagine/198--14-Marzo-2016.aspx>.

<sup>50</sup> See CESVI website: *Food Right Now: Spreco di cibo*, <http://foodrightnow.it/spreco-di-cibo>.

<sup>51</sup> Law 166/2016 of 19 August 2016: Disposizioni concernenti la donazione e la distribuzione di prodotti alimentari e farmaceutici a fini di solidarietà sociale e per la limitazione degli sprechi, <http://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:legge:2016;166>.

- Establishment of awareness campaigns on the Public Television channels to boost enterprises to donate and to inform consumers about food waste (art.9).

The law has produced mixed reactions in the wider public. Some have welcomed it as an important step to reduce FLW and have appreciated the involvement of multiple actors during the preparation phase. Others have expressed more sceptical thoughts. The FUSIONS report on the country highlights some weaknesses, such as the lack of national prevention targets and planning.<sup>52</sup> Some believe that it even risks creating two classes of citizens, those who can afford to buy nutritious food and those who can only be fed with whatever is left unsold.<sup>53</sup> The sanitary aspects are the most critical especially for private companies, in particular in relation to responsibility for hygienic/sanitary requirements for food prior to donation. This regards not only packaged food, whose content is not visible, but also fresh products (i.e., dairy), which need to have a secure cold chain that could be hard to guarantee if multiple actors are involved in food donation. This is particularly true if we consider that charitable organizations run by volunteers may not have adequate infrastructure nor trained personnel. A weak point of the law is thus the lack of provisions on the traceability of products (which should be provided by the Ministry of Health). Finally, the economic incentives seem too weak to boost food donations or to counter the fact that FLW risks becoming entrenched in the agri-food system. For these reasons, food donation cannot be considered a long-term strategy, but rather a first step to set up a truly just and sustainable food supply chain.

The Italian food supply chain is nonetheless quite virtuous if compared to other European countries. While some stages of the chain manage to limit or reuse the surplus, others face more difficulties due to various factors (food characteristics, fragmentation of subjects involved, etc.). In the retailing sector many actors have undertaken important actions not only to improve the efficiency of the whole supply chain, but also working with NGOs and charitable organizations dealing with food donation. A good example is for instance Megamark, which in 2016 donated more than 34 tons of food for a total value of 100,000 euros.<sup>54</sup> Another such case is Barilla, which has launched the so-called "integrated supply chain",<sup>55</sup> with important results obtained in the pasta production phase (only 2 percent loss in the field and production)<sup>56</sup> and with more than 4,000 tons of food donated globally.<sup>57</sup>

<sup>52</sup> Paolo Azzurro, Silvia Gaiani and Matteo Vittuari, *Italy. Country Report on National Food Waste Policy*, 30 June 2016, p. 12, [http://www.eu-fusions.org/phocadownload/country-report/FUSIONS IT Country Report 30.06.pdf](http://www.eu-fusions.org/phocadownload/country-report/FUSIONS%20Country%20Report%2030.06.pdf).

<sup>53</sup> Julie Mansuy and Tomaso Ferrando, *Food Waste at Time of Food Poverty*, cit.

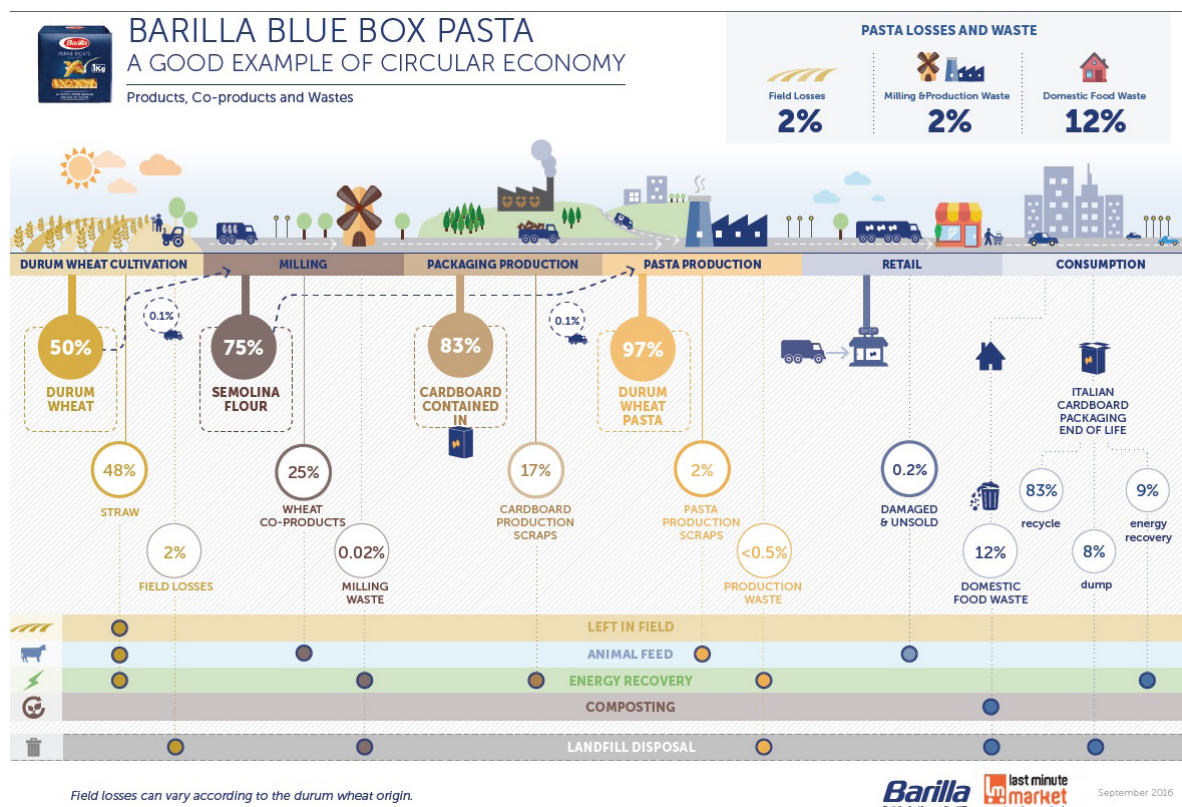
<sup>54</sup> Authors' interview with Megamark officials, 2017.

<sup>55</sup> Barilla, *Good for You, Good for the Planet. 2017 Report - Executive Summary*, May 2017, p. 45, <http://sustainability17.barillagroup.com/en/node/229>.

<sup>56</sup> Barilla, "Reducing Food Losses and Waste", in The Consumer Goods Forum, *Food Waste Commitments & Achievements of CGF Members*, January 2017, <http://bit.ly/FoodWasteCGF>.

<sup>57</sup> Barilla, *Good for You, Good for the Planet*, cit., p. 63. A strong role is also played by the Barilla

**Figure 4** | Barilla Blue Box Pasta



Source: Barilla, "Reducing Food Losses and Waste", cit.

Despite criticisms, the two national laws analysed here represent a step forward in the fight against FLW at the EU level. This is why some are proposing to extend these domestic dispositions at the European or even global level.<sup>58</sup> This of course would need to be done cautiously, in order not to be detrimental to the common goal of reducing FLW, as national food chain specificities would merge rather poorly into a common set of rules.<sup>59</sup>

## Conclusions and future areas of research

In the last years, the EU has certainly become a key actor in the global fight against FLW. It has taken already impressive steps, although there are still some pending

Centre for Food & Nutrition Foundation (BCFN), an independent multidisciplinary foundation that elaborates publications and analyses about food, nutrition, health and sustainability. Among them, the most remarkable results are the Food Sustainability Index as well as the "double pyramid", which ranks food on the basis of the environmental footprint (i.e., use of water, GHG emissions and consumption of natural resources).

<sup>58</sup> Kim Willsher, "Man Who Forced French Supermarkets to Donate Food Wants to Take Law Global", in *The Guardian*, 25 May 2015, <https://gu.com/p/497hp/stw>.

<sup>59</sup> Selina Juul, "Do We Really Need a Food Waste Police?", in *HuffPost*, 28 September 2016, <http://m.huffpost.com/us/entry/12108406>.

issues that future research will need to focus on. Among them, several stakeholders from different backgrounds (institutions, NGOs, academia and private companies) have pointed out the following:

- *Including the farming sector in measuring FLW:* This will not only provide a better and more complete picture of the phenomenon, but will also stop the unnecessary over-production of food. This would help to monitor more effectively food surpluses at the farming level and not just food wasted at the very end of the path. Some best practices to overcome current methodological problems could be suggested by certain programmes launched by FAO;<sup>60</sup>
- *Food donations:* It is crucial to harmonize the different EU normative systems but most importantly to set up financial (i.e., VAT exemptions), legal (i.e., responsibility) and sanitary (i.e., safety requirements) tools to foster food donations. This however cannot be considered as a long-term strategy to improve the efficiency of the food supply chain, but rather an important short- to medium-term strategy to have a more fair distribution of food;
- *Digitalization:* Apps will play a crucial role in the future to develop a bottom-up approach, to link big and small producers to retailers and consumers. There are already some important developments in this regard (i.e., Takestock<sup>61</sup> or LastMinuteSottoCasa,<sup>62</sup> to mention just a couple);
- *Consumers' empowerment and education:* Educating people to eat better and produce less waste is a crucial challenge. This will imply a stronger link between institutions, producers, retailers and consumers. More work is needed on the ethical and behavioural reasons that push consumers to produce FLW. A key point will be to better study food labelling. Recent studies<sup>63</sup> and polls<sup>64</sup> have showed that European citizens poorly understand the difference between "best before" and "use by" dates, which tend to generate a lot of FLW at the household level. Hence, it will be necessary to provide consumers with more information about ingredients and production techniques, in order to promote new consumer habits, which are more aware of the deep link between food consumption and water, land or biodiversity protection.

<sup>60</sup> Among them, the "Save Food: Global Initiative on Food Loss and Waste Reduction" (<http://www.fao.org/save-food>) and the "Global Strategy to improve Agricultural and Rural Statistics – GSARS" (<http://gsars.org>).

<sup>61</sup> See the Takestock website: <http://www.takestock.com>.

<sup>62</sup> See the LastMinuteSottoCasa website: <http://www.lastminutesottocasa.it>.

<sup>63</sup> Millie Elsen, Roxanne van Giesen and Jorna Leenheer, *Milan BExpo 2015: A Behavioural Study on Food Choices and Eating Habits*, Brussels, European Commission, 2015, <https://publications.europa.eu/en/publication-detail/-/publication/18d1e093-86ad-11e5-b8b7-01aa75ed71a1>.

<sup>64</sup> European Commission, "Food Waste and Date Marking", in *Flash Eurobarometers*, No. 425 (September 2015), <http://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/Survey/getSurveyDetail/instruments/FLASH/surveyKy/2095>.

- *Creating a DG FOOD?*: The most ambitious result would be a truly institutional change at the EU level, where drawing on the nexus between water–food–energy–health and climate change will help overcome the risk of a “silo approach”. This would allow the development of a solid EU Food Security policy which addresses both the internal and external implications of food security, gives food back the value it deserves and helps EU citizens to eat more healthy and sustainable food.

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