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**LISBON: PELOS FRUTOS CONHECE-SE A ÁRVORE:<sup>1</sup>**  
**FOOD WASTE IN THE LAND OF PLENTY**

Becky L. Jacobs\*

I was incredibly fortunate to participate in the 2019 Study Space XII in Lisbon (SSXII), the theme of which was *Living in a Tourist Destination: Regulating Planning, Housing*. The theme was particularly timely and relevant. In 2019, a record 27 million visitors flooded Portugal.<sup>2</sup> Lisbon, with an estimated population of only 517,802 as of January 2020,<sup>3</sup> had 18.4 million tourists<sup>4</sup> crowding its beautiful, but narrow and often steep, streets and its fabulous restaurants, bars, and cafes. The SSXII participants were among those throngs of tourists as we joined local academics, judges, and city officials and administrators who guided us around the city to critically examine the impact that all of us were having upon Lisbon's infrastructure, environment, affordable housing stock, social structures, and public services.

While many in our group were focused on Lisbon's affordable housing crisis, I was interested in the city's innovative response to another negative collateral consequence associated with over-tourism: food waste. This is an enormous problem world-wide as, according to the Food and Agriculture Organization of the United Nations ("UN"), one-third of all food produced for human consumption, approximately 1.3 billion tons per year, is wasted or lost globally.<sup>5</sup> Data as of March

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<sup>1</sup> This phrase directly translates as "By its fruits one knows the tree."

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<sup>2</sup> *Portugal achieves new tourists [sic] numbers record – Brits lead the way*, ESSENTIALBUSINESS.PT (Feb. 17, 2020), <https://www.essential-business.pt/2020/02/17/portugal-achieves-new-tourists-numbers-record-brits-lead-the-way/> [<https://perma.cc/2LBL-AECZ>].

<sup>3</sup> World Population Review - Portugal Population 2020 (Live), Worldpopulationreview.com, <https://worldpopulationreview.com/countries/portugal-population/> [<https://perma.cc/JW6X-KWDP>] (last visited July 6, 2020).

<sup>4</sup> *Portugal achieves new tourists numbers record – Brits lead the way*, *supra* note 4.

<sup>5</sup> Technical Platform on the Measurement and Reduction of Food Loss and Waste, FAO.ORG, <http://www.fao.org/platform-food-loss-waste/en/> [<https://perma.cc/FKZ8-GQ6L>] (last visited June 25, 2020). Food loss and food waste are not synonymous, loss being defined as "the decrease in the quantity or quality of food resulting from decisions and actions by food suppliers in the chain, excluding retailers, food service providers and consumers" and waste as

"the decrease in the quantity or quality of food resulting from decisions and actions by retailers, food service providers and consumers[.]" U.N. FAO, *The State of Food and Agriculture: Moving*

1, 2020 indicates that Europe produces 88 million tons of food waste annually, of which approximately one million tons is food waste from Portugal.<sup>6</sup> These data are not out of line with statistics from the United States, where, despite the fact that one in seven Americans is food insecure, nearly 62 to 63 million tons of food are sent to landfills, discarded, or left unharvested on farms annually.<sup>7</sup>

The food waste problem is being addressed on a policy basis at the highest levels.<sup>8</sup> For example, those engaging in agricultural law-related research are, of course, familiar with United Nations Sustainable Development Goal 12.3, which aspires to, “[b]y 2030, 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”.<sup>9</sup> It was exciting, however, to directly experience a city’s response to the problem. This short essay will briefly provide an overview of the food waste crisis and its consequences, will describe Lisbon’s approach to the problem as well as that of other governmental and private entities and individuals, and will offer a few suggestions for alternative options or improvements.

### **An Overview of The Problem**

Data from Portugal indicates that one million tons of food are wasted every year, primarily from restaurants, schools and universities, social institutions, and individual families.<sup>10</sup> The demand for food in wealthy cities such as Lisbon drives

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*Forward on Food Loss and Waste Reduction 5* (2019), available at <http://www.fao.org/3/ca6030en/ca6030en.pdf>.

<sup>6</sup> See, e.g., *Fighting Food Waste*, THE PORTUGAL NEWS (Mar. 1, 2020), <https://www.theportugalnews.com/news/fighting-food-waste/52539> [https://perma.cc/99TG-X9ED].

<sup>7</sup> *The Multi-Billion Dollar Food Waste Problem*, REFED.COM, <https://www.refed.com/?sort=economic-value-per-ton> [https://perma.cc/M839-V4ED] (last visited June 28, 2020).

<sup>8</sup> While interesting, the author has no room to debate the potentially philosophically oxymoronic nature of the phrase “food waste.” If something is food to one observer, can it conceptually be waste? Is the phrase dependent upon the subjective intent of an actor or rather the significance of an action related to the item? For a more in depth analysis, see Carrie Bradshaw, *Waste Law and the Value of Food*, 30 J. ENV’T L. 311, 323-25 (2018).

<sup>9</sup> Sustainable Development Goal 12.3, U.N. General Assembly, Transforming Our World: The 2030 Agenda for Sustainable Development, 21 October 2015, A/RES/70/1, available at <https://www.refworld.org/docid/57b6e3e44.html> (last visited July 6, 2020).

<sup>10</sup> Diogo Lorena & Iva Pires, *Combating Food Waste in Portugal: A Case Study of a Civil Society Initiative*, FOOD FUTURES: ETHICS, SCIENCE AND CULTURE 107 (Olsson, et al. ds. Wageningen 2016).

global agricultural markets and prices throughout the food chain – from planting to eating.<sup>11</sup> It is estimated that as much as 381.4 pounds of edible food are wasted per person annually through the food chain.<sup>12</sup> American households waste, on average, almost a third of the food they acquire, averaging approximately \$1,866 per year.<sup>13</sup> Only approximately 10% of food waste is salvaged for human consumption across the food chain each year.<sup>14</sup> The Grocery Manufacturers Association, National Restaurant Association, and Food Marketing Institute reported very low rates of food recovery: only 1.7% of food products deemed unsalable by food manufacturers; 18% from retailers and wholesalers; and 2% from restaurants.<sup>15</sup> It has been estimated that 870

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<sup>11</sup> Leonie Bellina, 16 *Feeding Cities Sustainably: The Contribution of a 'Zero Foodwaste-City' to Sustainable Development Goal 2, 'Zero Hunger'*, FOOD FUTURES: ETHICS, SCIENCE AND CULTURE 315 (Wageningen Acad. Pubs., 2016).

<sup>12</sup> Nuno Vieira E Brito, Paula Bico, & Carlos Brandao, *Food Waste in Portugal – A Public Policy with the Commitment of All Society*, ADV. NUTRI. & FOOD SCI.: ANAFS-157 (2019). The figure is a conversion from 173 kilograms in the original source text to pounds: “In addition, an unacceptable and direct relationship between economic development and the level of food waste is observed. In Europe, projections show that between 30% and 50% of edible food will be wasted every year through the whole food chain until it reaches the consumer. This equates, in the 28 member states of the European Union (EU-28), to **173 kilograms of food waste per person.**” *Id.* (emphasis added).

<sup>13</sup> *Science News - US Households Waste Nearly a Third of the Food They Acquire*, SCIENCE DAILY (Jan. 23, 2020), <https://www.sciencedaily.com/releases/2020/01/200123095853.htm> [<https://perma.cc/H7UB-F53N>]. Consumer confusion regarding the terms “sell-by” and “best by” contribute to this wastage; it has been estimated that as many as 90 percent of consumers discard some food prematurely as a result of misinterpreting food date labels. Nolan Kessler, *Chapter 787: Reducing Food Waste with Fresh Food Date Labeling Terminology*, 49 MCGEORGE L. REV. 355, 356 (2017) (quoting 2017 Cal. Stat. ch. 787, § 1(f)). In 2016, federal legislators introduced a bill that would have created a nationwide uniform food date labeling system, but the bill failed to pass. Food Date Labeling Act of 2016, H.R. 5298, 114th Cong. § 4(a)-(b), *available at* <https://www.congress.gov/bill/114th-congress/house-bill/5298/text>. A discussion of the issue is beyond the scope of this essay, but, for a more detailed description of the problem, see Emily Broad Leib, et al., *Consumer Perceptions of Date Labels: National Survey*, Harvard Food Law and Policy Clinic, National Consumer Institute, and Johns Hopkins Center for a Livable Future (May 2016), [http://www.chlpi.org/wp-content/uploads/2013/12/Consumer-Perceptions-on-Date-Labels\\_May-2016.pdf](http://www.chlpi.org/wp-content/uploads/2013/12/Consumer-Perceptions-on-Date-Labels_May-2016.pdf).

<sup>14</sup> EMILY BROAD LEIB, HARVARD LAW & POL’Y CLINIC & NAT. RES. DEFENSE COUNCIL, DON’T WASTE, DONATE 5 (2017), [http://www.chlpi.org/wp-content/uploads/2013/12/Dont-Waste-Donate\\_-March-2017.pdf](http://www.chlpi.org/wp-content/uploads/2013/12/Dont-Waste-Donate_-March-2017.pdf).

<sup>15</sup> FOOD WASTE REDUCTION ALLIANCE, ANALYSIS OF U.S. FOOD WASTE AMONG FOOD MANUFACTURERS, RETAILERS, & RESTAURANTS 14, 21, 28 (2016), [http://www.foodwastealliance.org/wp-content/uploads/2013/05/FWRA-Food-Waste-Survey-2016-Report\\_Final.pdf](http://www.foodwastealliance.org/wp-content/uploads/2013/05/FWRA-Food-Waste-Survey-2016-Report_Final.pdf)

million hungry people could be fed if only one-fourth of the food currently lost or wasted globally could be saved.<sup>16</sup>

This waste not only impacts food security for the poor, but it also squanders other resources, such as soil, water, energy, human capital, biodiversity, and land.<sup>17</sup> Food that is never eaten and livestock that never produce consumable products occupy 3.5 billion acres of land across the globe, a land “mass” that is larger than Canada.<sup>18</sup> Food waste also impairs our air and water quality and exacerbates our rapidly diminishing landfill capacity situation.<sup>19</sup> Food waste processes also produce greenhouse gas emissions, contributing to climate change.<sup>20</sup> Household food waste is estimated to result in 7% of global greenhouse gas emissions; in Europe, data indicate that approximately 22% of the climate impact potential is caused by the food sector.<sup>21</sup> Landfilled food waste generates so much methane, a greenhouse gas, that, if it were a country, it would be the third largest generator of greenhouse gas in the world, third only behind China and the United States.<sup>22</sup>

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<sup>16</sup> Luis Gonzalez Vaque, *Food Loss and Waste in the European Union: A New Challenge for the Food Law*, 10 EUR. FOOD & FEED L. REV. 20, 21 (2015).

<sup>17</sup> Bellina, *supra* note 11.

<sup>18</sup> Elizabeth Royte, *Future of Food - One-Third of Food Is Lost or Wasted: What Can Be Done*, NAT'L GEOGRAPHIC (Oct. 13, 2014), <https://www.nationalgeographic.com/news/2014/10/141013-food-waste-national-security-environment-science-ngfood/>.

<sup>19</sup> Jaime R.S. Fonseca, *A Latent Class Model to Discover Household Food Waste Patterns in Lisbon City in Support of Food Security, Public Health and Environmental Protection*, 4 INT'L J. FOOD SYS. DYNAMICS 184, 186 (2013).

<sup>20</sup> Vaque, *supra* note 16, at 21.

<sup>21</sup> Renata Soares Pinto, et al., *A simple awareness campaign to promote food waste reduction in a University canteen*, 76 WASTE MANAGEMENT 28, 29 (2018).

<sup>22</sup> Royte, *supra* note 18.

### Lisbon's Response<sup>23</sup>

Portugal has, and Lisbon in particular has, been proactive in responding to the food waste crisis.<sup>24</sup> Portugal has been a leader on food loss and waste policy issues. In 2014, a group of stakeholders, including representatives of government, public health administrators, international organizations, trade groups, academic entities, research institutions, civil society organizations, and consumers, committed to a multi-sectoral national strategy to combat food waste<sup>25</sup> that proved highly successful, saving over 10 million meals per year from being thrown away, creating an economic value of over 25 million Euros, and preventing the release of over 21,000 tons of CO<sub>2</sub> into the atmosphere.<sup>26</sup> Portuguese entities also contributed to the Portuguese-initiated “Desperdício Alimentar”, or food waste, petition, with the goal to change EU Regulation 178/2002.<sup>27</sup> This regulation, enshrining safety concerns, prohibited food banks from collecting and distributing cooked foods.<sup>28</sup>

Portuguese citizen groups also collaborated with the Portuguese national food authority, the Autoridade de Segurança Alimentar e Económica (ASAE), to develop a process by which cooked and other surplus food products that most considered unrecoverable could be collected and distributed safely.<sup>29</sup> The pilot program defined and collected four food types - uncooked foodstuff, soup, main course, and

<sup>23</sup> A caveat: this essay outlines efforts that largely are consistent with traditional charitable food measures, including food banking. This essay does not address critical analyses of the responses discussed herein. For example, one argument expounded by is that traditional donation-based responses serve only to divert attention from underfunded social welfare and income security systems that perpetuate food insecurity, deny choice, and undermine human dignity. *See, e.g., GRAHAM RICHES, FOOD BANK NATIONS: POVERTY, CORPORATE CHARITY AND THE RIGHT TO FOOD* 97-111 (New York: Routledge; 2018). “Universality and publicly funded social safety nets are expressions of solidarity and social rights which are in tension with the practical compassion of corporately organized food banking and the newly emerging food safety nets of the charity state.” *Id.* at 99. That is an analysis for another day.

<sup>24</sup> Bellina, *supra* note 11, at 108. A food bank was established in Lisbon in 1992, and there currently are a network of approximately seventeen food banks across the country that are coordinated by the Portuguese Federation of Food Banks. *Id.*

<sup>25</sup> Brito, *supra* note 12.

<sup>26</sup> *See Zero Deperidício*, <https://www.zerodesperdicio.pt/en/>.

<sup>27</sup> Council Regulation 178/2002, art. 22, 23, 2002 O.J. (L 31/1) (EC).

<sup>28</sup> Council Regulation 178/2002, art. 22, 23, 2002 O.J. (L 31/1) (EC).

<sup>29</sup> Lorena & Pires, *supra* at 108.

complementary foods (bread, cakes, fruit, and yogurts) - at the donor's site at agreed times in food grade containers that then were placed into temperature-controlled boxes.<sup>30</sup> Transportation times were minimized by matching donors to receiving entities.<sup>31</sup> During the trial program, more than 1,200 tons of food, equivalent to about 2.5 million meals and valued at more than 6.55 million dollars, were collected from donors; Lisbon alone had nearly 80 of the program's 115 donors.<sup>32</sup> The details and results of the Zero Waste Program were published and provided to the European Commission and the UN Food and Agriculture Organization, and it proved to be influential for several multi-jurisdictional food waste initiatives.<sup>33</sup> The national government emphasized its continuing commitment by establishing a National Commission to Combat Food Waste.<sup>34</sup>

Lisbon also created a Municipal Commission to Combat Food Waste in 2014,<sup>35</sup> and, in 2015, its City Council approved a Plan to Combat Food Waste to expand the collection and distribution of surplus food in the city in compliance with relevant hygiene and safety standards.<sup>36</sup> The plan amassed a network of nearly 5,000 food donors, volunteer workers, logistical partners, and beneficiaries, and, in 2015 alone, 2.1 million meals were collected and delivered to 2,000 families in the city.<sup>37</sup>

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<sup>30</sup> *Id.*

<sup>31</sup> *Id.*

<sup>32</sup> *Id.* at 107, 109. The original source stated the value as 6 million Euros, which the author converted via the spot inter-bank exchange rate on December 31, 2015, which was 1 EUR = 1.0931 USD. See *Historical Rates for the EUR/USD currency conversion on 31 December 2015 (31/12/2015)*, Poundsterlinglive.com, <https://www.poundsterlinglive.com/best-exchange-rates/euro-to-us-dollar-exchange-rate-on-2015-12-31> [<https://perma.cc/Z5KK-K88G>] (last visited July 5, 2020). Interestingly, among the donor categories, which were restaurants, distribution (e.g. supermarkets, hypermarkets), other private entities, public entities (such as the Bank of Portugal and the National Mint), schools and hospitals, etc., it was the distribution sector that contributed the vast majority of the donations to the program, with 78% of total donations. *Id.* at 109.

<sup>33</sup> *Id.* at 108.

<sup>34</sup> DR 2016. Republic Diary. Dispach n.º 14202-B/2016, 2.nd series, n.º 227, de 25 of November.

<sup>35</sup> Deliberação 210/CM/2014 (a criação de um Comissariado Municipal de Combate ao Desperdício Alimentar), 29 Maio 2014, available at [http://www.cm-lisboa.pt/fileadmin/Noticias/ficheiros/plano\\_desperdicio\\_alimentar.pdf](http://www.cm-lisboa.pt/fileadmin/Noticias/ficheiros/plano_desperdicio_alimentar.pdf) (last visited July 23, 2020).

<sup>36</sup> Plano Municipal de Combate ao Desperdício Alimentar, Câmara Municipal de Lisboa (CML/GVJA, CML/GVCDSPP, Fev. 2015), available at [http://www.cm-lisboa.pt/fileadmin/Noticias/ficheiros/plano\\_desperdicio\\_alimentar.pdf](http://www.cm-lisboa.pt/fileadmin/Noticias/ficheiros/plano_desperdicio_alimentar.pdf) (last visited July 23, 2020).

<sup>37</sup> See Lisbon's Application Form for the European Green Capital Award 2020, Indicator 8 – Waste, available at <https://ec.europa.eu/environment/europeangreencapital/winning-cities/2020-lisbon/15210-2/> (last visited July 23, 2020).

Under the auspices of the plan, network affiliates also negotiated a Cooperation Agreement with Portugal’s largest national retail trade association to facilitate the network’s food surplus collection and distribution efforts.<sup>38</sup> For other biowaste streams, Lisbon has an extensive composting network and a domestic bio-waste collection program<sup>39</sup> as well as a scheme that collects kitchen waste from producers such as restaurants and hotels.<sup>40</sup> These help the city minimize transport-related carbon emissions and transportation costs related to food waste incineration.<sup>41</sup> Instead, the program decreases waste that requires treatment and produces biogas and compost from anaerobic digestion.<sup>42</sup>

The city also has plans to create a digital platform to increase the redistribution of surplus food;<sup>43</sup> private apps are also entering the food waste field in Lisbon, and other cities globally, to offer low-cost meals that come from the daily food surplus from restaurants, hotels, supermarkets, grocery stores or bakeries.<sup>44</sup>

<sup>38</sup> *Id.*

<sup>39</sup> Case Studies and Best Practice Examples, *Cities100: Increasing resource recovery to tackle food waste in Lisbon* (Oct. 2019), [https://www.c40knowledgehub.org/s/article/Cities100-Increasing-resource-recovery-to-tackle-food-waste-in-Lisbon?language=en\\_US](https://www.c40knowledgehub.org/s/article/Cities100-Increasing-resource-recovery-to-tackle-food-waste-in-Lisbon?language=en_US) [<https://perma.cc/TLP6-XRZB>].

<sup>40</sup> See Lisbon’s Application Form for the European Green Capital Award 2020, Indicator 8 – Waste, *supra* note 37.

<sup>41</sup> Case Studies and Best Practice Examples, *supra* note 39.

<sup>42</sup> *Id.*

<sup>43</sup> See Lisbon’s Application Form for the European Green Capital Award 2020, Indicator 8 – Waste, *supra* note 37.

<sup>44</sup> See, e.g., TOO GOOD TO GO, <https://toogoodtogo.org/en>. “Come fight food waste with us Through our app, we connect our users with delicious unsold food from a variety of shops and restaurants all over Europe. So come join the world’s largest community of waste warriors!” *Id.* Another app that includes consumers in its food recovery network is Food for All, <https://foodforall.com/> (“Food for All connects individuals to tasty meals that otherwise wouldn’t have been sold, creating an extra revenue stream and eco friendly branding for your restaurant.”). See also Misfits Market, <https://www.misfitsmarket.com/> (“Save big by saving food - Fight food waste with organic produce and sustainably sourced pantry staples delivered to your door—up to 40% off grocery store prices.”). Other apps, such as Toronto-based Flashfood, create business-to-business platforms that respond to the food waste crisis. Flashfood partners with groceries chains, including U.S. chains Meijer and Hy-Vee in Michigan, New York, Pennsylvania and Wisconsin, to offer customers and community nonprofits the opportunity to purchase food close to the “best before” date at deep discounts, including meat, produce, seafood, deli and bakery products. Flashfood, *How It Works*, <https://www.flashfood.com/#How-it-works> (last visited June 30, 2020). See also Misfits Market, <https://www.misfitsmarket.com/> (“Save big by saving food - Fight food



Lisbon also has been the testing ground for numerous successful private initiatives to reduce food waste. One of the most widely-recognized may be ReFood, an organization that collects cooked but unserved food from restaurants and other partners, then packages and distributes it.<sup>45</sup> Based upon a “micro-local” model, ReFood began in Lisbon in 2011 “with a volunteer and a bicycle”<sup>46</sup> but is now expanding globally.<sup>47</sup> Its model relies upon volunteers to collect food and other donations and upon local public and private entities to donate physical space in which ReFood volunteers work.<sup>48</sup> Indeed, ReFood operates 100% on volunteer resources: “The ReFood Movement is a 100% voluntary, being an independent charity association 100% supported by citizens that does not ask for money or raises funds, does not sell anything, does not own property and does nothing that does not serve [its] mission.”<sup>49</sup>

One of ReFood’s partners is another widely-known Lisbon-based group that is responding to the food waste crisis. Fruta Feia, or “ugly fruit” in Portuguese,<sup>50</sup> is a consumer cooperative established in 2013 to promote the consumption of fruit that was previously rejected by grocers and other retail outlets due to its less than perfect appearance in terms of color, shape and size.<sup>51</sup> Its “*Beautiful People Eat Ugly Fruit*” slogan is part of its campaign to educate the public and “overturn the standardization trends regarding food, which have nothing to do with its quality and safety ... [and] fight the market inefficiency ....”<sup>52</sup> The co-op began with one distribution point in Lisbon with the goal of challenging consumers' misconceptions about ugly fruit and

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waste with organic produce and sustainably sourced pantry staples delivered to your door—up to 40% off grocery store prices.”)

<sup>45</sup> *How It Works-Practical Actions*, REFOOD, <https://www.re-food.org/pt/como-funciona/acoes-praticas> [<https://perma.cc/3QCX-FJ4Q>].

<sup>46</sup> *Evolution-Idea, Project, Movement*, REFOOD, <https://www.re-food.org/pt/evolucao/ideia-proyecto> [<https://perma.cc/3S6K-CABD>].

<sup>47</sup> Pinto, *supra* note 21, at 29.

<sup>48</sup> *How It Works-Resource Activation*, REFOOD, <https://www.re-food.org/pt/como-funciona/ativacao-de-recursos> [<https://perma.cc/TN32-AZAU>].

<sup>49</sup> *How It Works-Innovation*, REFOOD, <https://www.re-food.org/pt/como-funciona/inovacao> [<https://perma.cc/E9KD-652B>].

<sup>50</sup> FRUTA FEIA, <https://frutafeia.pt/en> (last visited July 22, 2020).

<sup>51</sup> *Id.*

<sup>52</sup> *The Project*, FRUTA FEIA, <https://frutafeia.pt/en/the-project> (July 22, 2020).

vegetables. EU grant money allowed it to expand its distribution network,<sup>53</sup> and today it has twelve delivery points through Portugal and saves as much as fifteen tons of fruits and vegetables per week from being thrown into the garbage.<sup>54</sup> The concept has won numerous awards, including, inter alia, a top “100 Projects for the Climate” Award given by the French Ministry of the Environment, Energy and Water in 2017 and the second award of the Ideas of Portuguese Origin promoted by Calouste Gulbenkian Foundation in partnership with COTEC Portugal in 2013.<sup>55</sup>

### Other Responses and Challenges

Lisbon is not alone in its efforts to tackle the problem of food waste. Cities, countries, regions, i.e., the EU, and intergovernmental organizations, such as the UN, have all begun to address the issue with various programmatic, policy-based, and legislative initiatives.<sup>56</sup> For example, as mentioned previously, one of the UN’s Sustainable Development Goals, SDG 12.3, is to reduce food loss along the supply chain and halve food waste at the consumption and retail stages by 2030.<sup>57</sup> At the EU, a 2020 Farm to Fork Strategy focuses on food waste as a key to achieving sustainability.<sup>58</sup> Also, the revised EU Waste Framework Directive, adopted in May 2018, calls on the EU countries to prevent waste generation, encourage food donation and other redistribution for human consumption, manage biowaste responsibly, support information campaigns, monitor food waste levels, and report on progress.<sup>59</sup> Pursuant to the revised Waste Directive, as of 2020, all EU member countries must measure levels of food waste at each stage of the supply and consumption chain.<sup>60</sup>

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<sup>53</sup> Melanie Hall, ‘Ugly fruit’ project tackling food waste wins EU grant to expand across Portugal, DW.COM (Nov. 25, 2015), <https://p.dw.com/p/1HByM>.

<sup>54</sup> FRUTA FEIA, *supra* note 51.

<sup>55</sup> Thanks, FRUTA FEIA, <https://frutafeia.pt/en/thanks> (last visited July 20, 2020).

<sup>56</sup> For example, the EU has declared its commitment to reducing food waste in its European Circular Economy Action Plan, European Commission (EC), 2015. Com/2015/0614 (EC, 2015), and in the Directive Amending the European Waste Framework Directive (European Parl. Doc. 2018).

<sup>57</sup> See Sustainable Development Goal 12.3, *supra* note 9.

<sup>58</sup> *A Farm to Fork Strategy for a Fair, Healthy and Environmentally-Friendly Food System*, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee & Committee of the Regions (EU COM. May 5, 2020).

<sup>59</sup> Waste Framework Directive 2018/851/EC, 2018 O.J. (L.150/109), available at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L0851&from=EN>.

<sup>60</sup> *Id.* recital 31, art. 2(1).

At the national level, Japan may be the first country to pass legislation regulating the disposal of food waste.<sup>61</sup> In 2000, Japan enacted its Basic Act for Establishing a Sound Material-Cycle Society (Basic Framework Act) to promote its vision of a sound material-cycle society that “reduces natural resource consumption and minimizes environmental impact.”<sup>62</sup> The 2000 Food Recycling Act promoted the reducing and recycling food wastes into fertilizer and feed and created obligations in this regard for businesses that generate significant food waste.<sup>63</sup> The Diet followed the 2000 Act with the Food Loss Act in 2019 as part of its implementation of measures to reduce household food waste in accord with U.N. SDG 12.3.<sup>64</sup>

France passed the first national law in Europe focusing on reducing food waste.<sup>65</sup> The 2016 law requires large grocery stores to contract with charities to donate unwanted food and imposes penalties for the deliberate destruction of unused food.<sup>66</sup> Italy also enacted legislation in 2016, but it took another approach, essentially providing incentives for those who donate and removing regulatory barriers that made donation difficult.<sup>67</sup>

In the U.S., where it has been estimated that over 30% of all the available food supply remains uneaten each year,<sup>68</sup> the federal government has taken several steps to discourage food waste. Congress passed the Bill Emerson Good Samaritan Food Donation Act in 1996 to encourage food donation by creating a national minimum

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<sup>61</sup> See generally JAPAN’S MINISTRY OF THE ENV’ T, MINISTER’S SECRETARIAT, WASTE MGMT. & RECYCLING DEP’T, POL’Y PLAN. DIV., HISTORY AND CURRENT STATE OF WASTE MANAGEMENT IN JAPAN (Feb. 2014), <https://www.env.go.jp/en/recycle/smcs/attach/hcswm.pdf>.

<sup>62</sup> Food Recycling Act, Act No. 116 of 2000, amended by Act No. 83 of 2007.

<sup>63</sup> *Id.* at Arts. 7 & 9.

<sup>64</sup> Act to Promote Food Loss Reduction, Act No.19 of 2019 (Reiwa 1) (May 2019).

<sup>65</sup> See Loi 2016-138 du 11 février 2016 relative à la lutte contre le gaspillage alimentaire, JOURNAL OFFICIEL DE LA RÉPUBLIQUE FRANÇAISE [J.O.], Feb. 12 [hereinafter Loi 2016-138].

<sup>66</sup> *Id.*

<sup>67</sup> Legge 19 agosto 2016 Disposizioni concernenti la donazione e la distribuzione di prodotti alimentari e farmaceutici a fini di solidarietà sociale e per la limitazione degli sprechi. (Law No. 166/2016, concerning provisions on the donation and distribution of food and pharmaceutical to limit food waste (Aug. 30, 2016).)

<sup>68</sup> Jean C. Buzby, Hodan F. Wells, and Jeffrey Hyman, U.S. Dept. of Agric., Econ. Res. Ser. EIB-121, THE ESTIMATED AMOUNT, VALUE, AND CALORIES OF POSTHARVEST FOOD LOSSES AT THE RETAIL AND CONSUMER LEVELS IN THE UNITED STATES, at ii (2014), [https://www.ers.usda.gov/webdocs/publications/43833/43680\\_eib121.pdf?v=41817](https://www.ers.usda.gov/webdocs/publications/43833/43680_eib121.pdf?v=41817).

liability protection for food recovery and food distribution made in good faith.<sup>69</sup> It also enacted the Federal Food Donation Act in 2008 to require, among other things, that “all [federal] contracts above \$25,000 for the provision, service, or sale of food in the United States ... include a clause that ... encourages the donation of excess, apparently wholesome food to nonprofit organizations that provide assistance to food-insecure people[.]”<sup>70</sup> Other federal laws relevant to food waste reduction efforts include the Volunteer Protection Act of 1997, which provides liability shields for volunteers,<sup>71</sup> and the Emergency Food Assistance Program, which authorizes the Secretary of Agriculture to provide monetary assistance to agencies participating in food waste-related initiatives.<sup>72</sup> Federal tax incentives also are available for food donations.<sup>73</sup> At the federal agency level, the U.S. Department of Agriculture and the U.S. EPA announced the nation’s first domestic goal in 2015 to reduce food loss and waste by half by the year 2030,<sup>74</sup> consistent with UN SDG Target 12.3.<sup>75</sup>

Governmental units at the state and city level also have joined in food waste reduction legislative efforts. Even prior to the passage of the federal Bill Emerson Food Donation law, all fifty states had some form of Good Samaritan food donation law,<sup>76</sup> and several states enacted much more aggressive legislation. Vermont, for example, has legislation that diverts virtually all food scraps from landfills to certified (composting, anaerobic digestion) facilities in its Universal Recycling Law.<sup>77</sup> On the opposite coast, Oregon passed a 15% tax credit for growers and producers who donate surplus or dedicated crops to Oregon food banks and food pantries, legislation that garnered support across the political spectrum.<sup>78</sup> Somewhere in the middle,

<sup>69</sup> 42 U.S.C. § 1791(c).

<sup>70</sup> Promoting Federal Food Donation Act, 42 U.S.C.A. § 1792 (2008). The Act also provides immunity from liability for donations made in good faith to non-profit organizations. *Id.*

<sup>71</sup> 42 U.S.C.A. §§ 14501 to 14505.

<sup>72</sup> 7 U.S.C. § 7508.

<sup>73</sup> *See, e.g.*, 26 U.S.C. § 1 note (2018). *See also* 26 U.S.C. § 170(e)(3) (2018).

<sup>74</sup> Sustainable Management of Food - United States 2030 Food Loss and Waste Reduction Goal, U.S. Env'tl. Protection Agency (last visited Nov. 9, 2020), <https://www.epa.gov/sustainable-management-food/united-states-2030-food-loss-and-waste-reduction-goal>.

<sup>75</sup> *See* Sustainable Development Goal 12.3, *supra* note 9.

<sup>76</sup> *See, e.g.*, Stacey H. Van Zuiden, Note, *The Good Food Fight for Good Samaritans: The History of Alleviating Liability and Equalizing Tax Incentives for Food Donors*, 17 DRAKE J. AGRIC. L. 237, 243 (2012).

<sup>77</sup> VT. STAT. ANN. tit. 10, § 6605(k) (West 2017).

<sup>78</sup> Or. Rev. Stat. §§ 315.154, 315.156 (2019).

geographically and from a regulatory perspective, the Colorado legislature created a volunteer Colorado Food Systems Advisory Council to provide guidance to lawmakers and food advocates that strengthens “healthy food access for all Coloradans through Colorado agriculture and local food systems and economies.”<sup>79</sup> One of its early White Papers provided an overview of food waste issues in Colorado, including the roles of grocery retailers and food assistance programs in decreasing waste and increasing food distribution.<sup>80</sup>

At the city level, a San Francisco ordinance requires all businesses and households to sort organics for collection and composting, and it is estimated that the city now collects more than 220,000 tons of organic waste each year.<sup>81</sup> Seattle’s Municipal Code also prohibits residents and businesses from putting food scraps into their garbage.<sup>82</sup>

Non-governmental efforts that focus on reducing food waste also proliferate, many of which involve norm-influencing or norm-management campaigns. In the UK, for example, grocery chains promoted the “Love Food Hate Waste” campaign, developed by Waste and Resources Action Programme (“WRAP”), to encourage consumers to plan, portion, store, freeze, and use food more efficiently in order to waste less food.<sup>83</sup> In the U.S., the approximately 238 private, non-profit Food Policy Councils (FPCs), including two Native American FPCs, work on food waste issues,<sup>84</sup> as do for-profit private entities. For example, the Food Marketing Institute and the Grocery Manufacturers Association, two U.S. grocery industry trade groups, adopted voluntary standards for product date labels.<sup>85</sup>

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<sup>79</sup> Colorado Senate Bill 10-106 (2010). See Colorado Food Systems Advisory Council, <https://cofoodsystemscouncil.org/> (last visited Nov. 8, 2020).

<sup>80</sup> COFSAC 15-04, *Barriers & Opportunities for Healthy Food Recovery From Grocery Retail to Hunger Relief Organizations* (Aug. 2015), <https://cofoodsystemscouncil.org/wp-content/uploads/2018/02/COFSAC-Healthy-Food-August.pdf>.

<sup>81</sup> S.F., Cal., Ordinance 100-09 (June 9, 2009).

<sup>82</sup> Seattle Municipal Code § 21.36.083 (violations of this prohibition by residential curbside or backyard customers shall result in an additional collection fee).

<sup>83</sup> See LOVEFOODHATEWASTE, <https://lovefoodhatewaste.com/> (last visited Oct. 4, 2020).

<sup>84</sup> KAREN BASSARAB, RAYCHEL SANTO & ANNE PALMER, FOOD POLICY COUNCIL REPORT 2018 at 5, 15, 25-28 ((Johns Hopkins Center for a Livable Future-Food Pol’y Network 2018), [https://assets.jhsph.edu/clf/mod\\_clfResource/doc/FPC%20Report%202018-FINAL-4-1-19.pdf](https://assets.jhsph.edu/clf/mod_clfResource/doc/FPC%20Report%202018-FINAL-4-1-19.pdf)).

<sup>85</sup> See Press Release, Grocery Mfrs. Ass’n, *Grocery Industry Launches New Initiative to Reduce Consumer Confusion on Product Date Labels* (Feb. 15, 2017),

Technological advancements are also offering food saving opportunities. Grocery chains Kroger, Whole Foods, and Target, for example, are adopting an AI system called Shelf Engine that analyzes historical order and sales data and makes order predictions to minimize waste.<sup>86</sup> Similarly, Spoiler Alert's private B2B software trading platform allows members like Hello Fresh and Campbell's to manage "discount sales and donation processes for slow-moving, excess, discontinued, and distressed food inventory."<sup>87</sup>

Many of these initiatives, particularly those inspired by private efforts, confront challenges that pose barriers to their effectiveness and/or more widespread adoption. For example, hygiene or nuisance regulations often thwart efforts to redistribute surplus food by imposing the same significant obligations on all food distribution operations, regardless whether they are volunteer, charitable, or commercial, creating prohibitive cost or administrative burdens for those working with food donations.<sup>88</sup> This is true even in laws crafted specifically to encourage food recovery efforts, such the Bill Emerson Good Samaritan Food Donation Act.<sup>89</sup> These obligations can task the limited capacities of charitable organizations and grassroots start-ups and deter wider participation in surplus food redistribution networks.<sup>90</sup> Food safety is, of course, a critical issue, but advocates urge regulators to consider alternatives to a binary (commercial v. private) food environment in which a third, or middle ground, of charitable and donor organizations and food sharing schemes exists.<sup>91</sup>

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<https://consumerbrandsassociation.org/posts/grocery-industry-launches-new-initiative-to-reduce-consumer-confusion-on-product-date-labels/>.

<sup>86</sup> Shelf Engine, *How It Works*, <https://www.shelfengine.com/how-it-works/> (last visited Nov. 10, 2020).

<sup>87</sup> Spoiler Alert, *Better manage excess food inventory*, <https://www.spoileralert.com/> (last visited Nov. 8, 2020).

<sup>88</sup> Anna R. Davies, Agnese Cretella & Vivien Franck, *Food Sharing Initiatives and Food Democracy: Practice and Policy in Three European Cities*, 7 *POLITICS & GOVERNANCE* 8, 17 (2019). For a discussion of the criminalization of food sharing efforts in U.S. cities designed to respond to hunger among homeless populations, see Marc-Tizoc González, *Hunger, Poverty, and the Criminalization of Food Sharing in the New Gilded Age*, 23 *Am. J. Gender Soc. Pol'y & L.* 231 (2014).

<sup>89</sup> 42 U.S.C. § 1791(c), *supra* note 69.

<sup>90</sup> Davies, et al., *supra* note 88, at 17.

<sup>91</sup> Anna R. Davies, Agnese Cretella & Vivien Franck, *Food Sharing Initiatives and Food Democracy: Practice and Policy in Three European Cities*, 7 *POLITICS & GOVERNANCE* 8, 13 (2019).

Other challenges include the lack of protection of land areas devoted to shared urban agricultural systems and community gardens vis-à-vis commercial development. Whether on public or private land, the precarious nature of access to land is a constant threat to the success of numerous shared growing projects.<sup>92</sup> The land issue is becoming a more serious food security concern in urban centers as they become more and more removed, both functionally and geographically, from food sources and increasingly reliant upon what has proven during the COVID-19 crisis to be a surprisingly fragile global food supply distribution network.<sup>93</sup> This network's fragility is related to a number of factors, including, inter alia, the cost of fuel, regulatory schemes, the vagaries of political authorities, the virtual and physical health and robustness of the labor, and the corporate links in the supply chain.<sup>94</sup>

There also is a perception that consumers will resist business efforts to reduce food waste if it impacts their shopping or eating experiences. Data, however, suggest otherwise. For example, one survey reported 68% of those surveyed would prefer restaurants that earned a criteria-based sustainability seal, that 76% would take leftovers home in doggy bags, and that 56% would like the option to order smaller portions.<sup>95</sup> Surveys by other researchers indicate similar levels of consumer support for food waste initiatives by business that they frequent, e.g., 96% of bakery customers do not expect a full selection at the end of the day, and 50% would be willing to pre-order allowing bakeries to more accurately plan daily product supplies.<sup>96</sup>

This consumer response may reflect an instinctive aversion to wasting food when others are starving. While it is rarely discussed in explicit terms, this ethical dimension of the food waste dilemma may offer optimism for regulators and food advocates seeking to design norm-influencing or norm-managing campaigns.

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<sup>92</sup> See, e.g., Davies, et al., *supra* note 88, at 14.

<sup>93</sup> M. Sanchez Salvador, *An Outline of the Foodscape of Lisbon: Knowledge from the past for a Better Future*, in FOOD FUTURES 440, 441 (Wageningen Acad. Publishers 2016).

<sup>94</sup> *Id.*

<sup>95</sup> See Bellina, *supra* note 11.

<sup>96</sup> *Id.*

**‘There is almost no one in the food system who wants to waste food ... And yet, the system as it is currently set up produces large volumes of food waste.’<sup>97</sup>**

*Prof. Peter Jackson*

As I reflect on my incredible SSXII experience and write my thoughts, it is nearly impossible for me to imagine the reality of a COVID-19-impacted Lisbon – a Lisbon without crowded, energy-filled streets and with empty hotel beds and restaurant tables. As one Portuguese travel industry official said, “[t]he pandemic attacked the tourism sector in an ‘extremely violent’ way.”<sup>98</sup>

What has not changed, however, in Lisbon or globally, is the difficult dilemma of food waste. The COVID-19 pandemic and the associated economic downturn have exacerbated the world’s food waste situation. With their restaurant, hotel, theme park, university and school, and other commercial clients closing, large farmers have been forced to destroy millions of pounds of highly perishable fresh food that they could no longer sell.<sup>99</sup> Paradoxically, however, the pandemic has also resulted in an “unprecedented demand on food banks. ... [M]ore people than ever line up at food pantries across the country.”<sup>100</sup> Although growers have donated thousands of pounds of produce to food banks, charities’ storage capacities limit the amount of perishable fruits and vegetables that they can accept, and acres of fruits and vegetables are being left to rot, and thousands of gallons of milk dumped, due to the coronavirus crisis.<sup>101</sup>

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<sup>97</sup> Alex Whiting, *Interview-Coronavirus Outbreak, Q&A: Covid-19 Pandemic Highlights Urgent Need to Change Europe’s Food System*, HORIZON-MAGAZINE.EU (May 4, 2020), <https://horizon-magazine.eu/article/qa-covid-19-pandemic-highlights-urgent-need-change-europe-s-food-system.html> [<https://perma.cc/88NH-E8GP>](quoting Prof. Peter Jackson, Institute for Sustainable Food, University of Sheffield, UK).

<sup>98</sup> *COVID-19 hits tourism, sports hard in Portugal*, XINHUANET.COM (Mar. 31, 2020), [http://www.xinhuanet.com/english/2020-03/31/c\\_138934659.htm](http://www.xinhuanet.com/english/2020-03/31/c_138934659.htm) [<https://perma.cc/7ZXE-QF24>].

<sup>99</sup> See, e.g., David Yaffe-Bellany and Michael Corkery, *Dumped Milk, Smashed Eggs, Plowed Vegetables: Food Waste of the Pandemic*, N.Y. TIMES (APR. 11, 2020), <https://www.nytimes.com/2020/04/11/business/coronavirus-destroying-food.html> [<https://perma.cc/5J6C-NYW8>].

<sup>100</sup> Nora Healy, *How has COVID-19 impacted food waste?*, FOODFORWARD.ORG (Apr. 29, 2020), <https://foodforward.org/2020/04/how-has-covid-19-affected-food-waste/> [<https://perma.cc/G5SM-NFN2>].

<sup>101</sup> Tamara Lush, *Coronavirus claims an unexpected victim: Fla. vegetables*, ABCNEWS (Apr. 8, 2020), <https://abcnews.go.com/Business/wireStory/coronavirus-claims-unexpected-victim-florida-vegetables-70041972> [<https://perma.cc/8GX2-JPNT>]. Creativity has already inspired a number of entrepreneurial actors in the food supply chain to find new ways to market products and reach consumers during the COVID-19 emergency. Farmers have created or increased direct-to-consumer sales, and co-ops and other collaborative business enterprises have arisen to identify



As the economic impact of the prolonged COVID-19 quarantine began to take its toll and demand for donated food increased, charities found themselves squeezed between increasing food prices, fewer volunteers, and dramatic declines in donations from supermarkets that had been emptied by the panic buying of terrified shoppers.<sup>102</sup>

Hopefully, this too shall pass, and, if and when it does, Lisbon's creative and inspiring food waste solutions should be studied, adapted, and expanded in other locations globally. Consideration should be given to creatively addressing the challenges that repeatedly confront communities and organizations seeking to tackle food waste, including the lack of flexibility in food safety laws. We now need to harness our appetites and channel them into a taste for a less wasteful food system, one that is satisfying gastronomically, ecologically, *and* economically.

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delivery options and match supply-side farm and dairies with schools, restaurants, and other outlets. Susie Cagle, *'A Disastrous Situation': Mountains of food Wasted as Coronavirus Scrambles Supply Chain*, The Guardian (Apr. 9, 2020), <https://www.theguardian.com/world/2020/apr/09/us-coronavirus-outbreak-agriculture-food-supply-waste> [<https://perma.cc/VAL3-MH28>].

<sup>102</sup> Nina Lakhani, Maanvi Singh & Erum Salam, *US News - 'We May Have to Ration': US Food Banks Face Shortages as Demand Surges*, The Guardian (Apr. 17, 2020), <https://www.theguardian.com/us-news/2020/apr/17/us-food-banks-over-budget-demand-coronavirus> [<https://perma.cc/6534-CXXE>]. See also Food Waste Prevention Initiatives During the COVID-19 Crisis, NEWS FROM THE EU PLATFORM ON FOOD LOSSES AND FOOD WASTE (Mar. 2020), <https://perma.cc/X7TR-UE6W>.