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Comparative Food Waste Law and Policy

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Reducing food waste has rapidly become an agenda item for various international organizations addressing environmental protection[1] (particularly biodiversity loss[2] and climate change[3]) and food security.[4] Food waste has also received the attention of intergovernmental forums like the G7 [5] and G20.[6] This chapters begins by explaining why preventing food waste matters. It then outlines relevant definitions, priorities and causes of food waste across the supply chain. We then use three case studies from the United Kingdom, Canada, and Brazil to compare (i) how food waste is defined and how much is wasted, (ii) how these countries are tackling food waste, and (iii) where on the food waste hierarchy these policies and programs are aimed. The paper concludes with recommendations to improve food waste reduction policies to meet international climate and sustainability commitments.

1. Why does preventing food waste matter?

The way different jurisdictions frame the food waste problem will significantly shape the law and policy tools they are likely to favour.[7] Many of these tools have potential co-benefits, with opportunities to achieve multiple goals around waste, climate change, human health, food security and fair trade. Rationales for reducing food waste can range from simple economic efficiency, to moral outrage,[8] to sustainability concerns such as tackling GHG emissions and preserving environmental resources. Other drivers are eliminating food insecurity (including through right to food arguments) or achieving food sovereignty. It is also essential to be alert to potential conflicts between these goals that can lead a policy choice to have inadvertent negative impacts on other goals if a sustainable, just food system lens is not applied.[9]

From a climate perspective, the catchy headline is that if food loss and waste were a country, it would be the third largest emitter of GHGs in the world.[10] Organics in landfill release methane, a GHG far

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[1] *Why the global fight to tackle food waste has only just begun*, UN environment programme (Sept. 22, 2022), https://www.unep.org/news-and-stories/story/why-global-fight-tackle-food-waste-has-only-just-begun.
[2] *See e.g.*, Conference of the Parties to the Convention on Biological Diversity, *Kunming-Montreal Global biodiversity framework: draft decision submitted by the President*, U.N. Doc. CBD/COP/15/L.25 (Dec. 18, 2022), https://www.cbd.int/doc/c/e6d3/cd1d/daf663719a03902a9b116c34/cop-15-l-25-en.pdf.
[3] *Fighting Food Waste Means Fighting Climate Change*, UN Climate Change News (Sept. 29, 2020), https://unfccc.int/news/fighting-food-waste-means-fighting-climate-change.
[4] *Technical Platform on the Measurement and Reduction of Food Loss and Waste*, Food and Agricultural Organization of the United Nations, https://www.fao.org/platform-food-loss-waste/en/.
[5] *G7 Climate, Energy and Environment Ministers' Communiqué*, G7/G8 Environment Ministerial Meetings (May 27, 2022), https://www.bundesregierung.de/resource/blob/974430/2044350/84e380088170c69e6b6ad45dbd133ef8/2022-05-27-1-climate-ministers-communique-data.pdf?download=1.
[6] G20 Indonesia, "G20 Bali Leaders' Declaration," November 16, 2022, https://www.consilium.europa.eu/en/press/press-releases/2022/11/16/g20-bali-leaders-declaration/ G20 Italy, "G20 Agriculture Minister's Meeting: Communiqué," September 18, 2021, http://www.g20italy.org/italian-g20-presidency/ministerial-meetings/g20-agriculture-ministers-meeting.html.
[7] See generally, Carrie Bradshaw, *England's fresh approach to food waste: problem frames in the Resources and Waste Strategy*, 40 Legal Studies 321 (2020).
[8] See generally David Evans, *Food Waste: Home Consumption, Material Culture and Everyday Life* (Bloomsbury Academic 2014).
[9] Effie Papargyropoulou et al., *The Future of Surplus Food Redistribution in the UK: Reimagining a "Win-Win" Scenario,* 108 Food Policy 102230 (2022).
[10] *Promoting Sustainable* Lifestyles, UN environment programme,https://www.unep.org/regions/north-america/regional-initiatives/promoting-sustainable-lifestyles.

more potent than CO2 but with a shorter "shelf life," so reducing food waste would have immediate salutary effects on climate change. Many countries have signed international agreements and have national targets for GHG reduction, and awareness of the link between food waste and climate is growing. Sustainable Development Goal 12.3, calling for "halving per capita global food waste at the retail and consumer levels and reducing food losses along production and supply chains" by 2030, led signatory countries to put in place or improved legal and policy frameworks to measure and reduce food waste. From a policy perspective, if sustainability is the driving goal, tools such as subsidies and just transition plans related to climate change and sustainable food productions systems can be usefully aimed at transitioning away from an agrifood system designed to produce excess food.[11]

If the main policy goal is to tackle food insecurity, different tools might be used.[12] According to the World Food Programme (WFP), 333 million people across 78 countries faced acute food insecurity in 2023.[13] The food insecurity lens is often used by those advocating productivist global and national policy choices that incentivize more food production and increases in technological solutions such as GMOs and high-tech farming.[14] The food security lens also often produces programs designed to re-route food waste to food banks. However, everyone has the right to fresh, nutritious, affordable, and culturally appropriate food, not merely to unwanted leftovers. A larger restructuring of the food system that includes preventing food waste and redirecting these cost savings to programs such as basic income guarantees[15] could achieve two policy goals: food justice and environmental sustainability.

2. Food waste definitions, priorities, and locations

The case studies below consider the broad legal, regulatory, and governance approaches deployed to tackle food waste in the UK, Canada, and Brazil. These techniques, including direct/command and control regulation, economic instruments, and voluntary/soft law will be familiar to environmental lawyers. However, in structuring our comparison, we first consider food waste definitions, priorities, and the causes of food waste across the supply chain.

(i) Definitions

[11] Tim G Benton and Rob Bailey, *The Paradox of Productivity: Agricultural Productivity Promotes Food System Inefficiency* (2019) 2 Global Sustainability 1. However, agricultural subsidies are sometimes part of the problem. *Id. See also* Stephanie Wunder et al., *Policies against Consumer Food Waste* (Refresh 2019); Bojana Bajželj et al., *The Role of Reducing Food Waste for Resilient Food Systems* 45 Ecosystem Services 101140 (2020); Peter Alexander and Dominic Moran, *Rethinking Food Waste for a Healthier Planet* 1 The Lancet Planetary Health e170 (2017); Peter Alexander et. al., *Losses, Inefficiencies and Waste in the Global Food System* 153 Agricultural systems 190 (2017)..

[12] The Food and Agriculture Organization (FAO) says a person is food insecure if they "lack regular access to enough safe and nutritious food for normal growth and development and an active and healthy life." *Hunger and Food Security*, Food and Agriculture Organization of the United Nations, https://www.fao.org/hunger/en/.

[13] *A global food crisis*, World Food Programme, https://www.wfp.org/global-hunger-crisis.

[14] *See e.g.*, Steve Gliessman, *Changing the food system narrative*, 46 Agroecology and Sustainable Food Systems 789-90 (2022), https://www.tandfonline.com/doi/epdf/10.1080/21683565.2022.2082569?needAccess=true&role=button.

[15] E.g., Action on food prices (to internalise externalities) alongside interventions to improve equality, raise incomes, and provide an adequate social security safety net. Scott Lougheed and Charlotte Spring*, Conduits That Bite Back* in *Routledge Handbook of Food Waste ch.28* (Christian Reynolds et al. eds. 2020); *Hungry for Change,* Fabian Society, (2015) https://fabians.org.uk/publication/hungry-for-change/.

The lack of a universally accepted definition for food waste poses a significant challenge to measuring and preventing food waste.[16] This lack of consensus is partly due to the food supply chain's complexity, but also because defining food waste is not a value-free exercise. Drawing lines between food and waste involves the allocation of risks, power, and responsibility for food waste, and has the potential to mask parts of the problem.[17] The main driver behind efforts to standardize the definition is the need for comparable food waste data in establishing baselines, understanding food waste's causes and potential solutions, and evaluating interventions.[18]

Definitions of food waste tend to start by defining 'food' in a way that acknowledges its purpose in feeding humans.[19] For example, the Global Food Loss and Waste (FLW) Accounting and Reporting Standard, developed by the World Resources Institute,[20] defines food as any substance that is intended for human consumption, as well as food that is no longer fit for human consumption or passed an expiration date.[21] While inedible parts of food such as bones, rinds, and pits/stones are often not intended to be consumed, they are typically included as food, although they may be measured separately.[22] This 'food' then becomes 'food waste' when it has left, been removed from, or diverted from the food supply chain. To this end, the FLW Standard lists 10 food waste 'destinations': Animal feed; Bio-based materials/biochemical processing; Codigestion/anaerobic digestion (AD); Composting/aerobic processes; Controlled combustion; Land application; Landfill; Not harvested or ploughed in; Refuse/discards/litter; Sewer/wastewater treatment.[23]

Other distinctions are sometimes drawn. As what is considered 'inedible' can vary culturally and temporally,[24] some definitions distinguish between 'avoidable', 'unavoidable', and 'possibly

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[16] Beatrice Garske et al., C*hallenges of Food Waste Governance: An Assessment of European Legislation on Food Waste and Recommendations for Improvement by Economic Instruments* 9 Land 231 at 1, 5 (2020).

[17] Carrie Bradshaw, *Waste Law and the Value of Food* 30 Journal of Environmental Law 311 (2018); *Driven to Waste: The Global Impact of Food Loss and Waste on Farms, World Wildlife Fund* (WWF-UK 2021), https://www.worldwildlife.org/publications/driven-to-waste-the-global-impact-of-food-loss-and-waste-on-farms.

[18] Stephanie Wunder et al., *Policies against Consumer Food Waste, Background paper to REFRESH policy brief 41.* (Refresh, March 4, 2019).

[19] *FUSIONS Definitional Framework for Food Waste*, FUSIONS (The Swedish Institute for Food and Biotechnology 2014); *Food Loss and Waste Accounting and Reporting Standard (1.0)*, Food Loss and Waste Protocol Steering Committee (World Resources Institute 2016); Regulation 178/2002/EC of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety) [2002] OJ L31/1, Art 2.

[20] *Food Loss and Waste Accounting and Reporting Standard (1.0)*, Food Loss and Waste Protocol Steering Committee, 2 (World Resources Institute 2016), https://foodlossandwasteprotocol.org/wp-content/uploads/2019/03/FLW_Standard_Exec_Summary.pdf The World Resources Institute (WRI) is a global NGO.

[21] *Id* at 3. "The FLW Standard is designed to allow for the fact that different organizations will have different reasons for quantifying FLW. These different goals lead to (or government regulations may even explicitly state) different definitions of what constitutes FLW. The FLW Standard, therefore, defines the possible components of FLW in terms of the possible material types (i.e., food and/or associated inedible parts) and destinations (where material removed from the food supply chain is directed—see Figure 1). It allows an entity to select which combination of material types and destinations it considers to be 'food loss and waste,' in accordance with the entity's stated goals."

[22] *Id.* at 2.

[23] *Id.* at 3.

[24] *See e.g.,* Miranda J Nicholeset al., *Surely You Don't Eat Parsnip Skins? Categorising the Edibility of Food Waste* 147 Resources, Conservation and Recycling 179 (2019).

avoidable' food waste.[25] 'Possibly avoidable' reflects the grey area between edibility and inedibility. In addition, 'food loss' is sometimes used to denote nutrients lost in production, post-harvest, and processing, distinct from 'food waste', used for food discarded later in the supply chain, particularly by consumers (by choice or as result of negligence).[26] However, the distinction has been criticised for obscuring how practices (particularly associated with retailers) drive significant levels of waste on farms, while also 'blaming' consumers for household food waste arising sometimes for reasons beyond their own control.[27] References in this chapter to food waste thus include food loss, unless otherwise stated.

(ii) Priorities: the Waste Hierarchy

The waste hierarchy is the central guiding principle for waste law and policy in several OECD countries.[28] It provides a priority order for dealing with waste, at the top of which is waste 'prevention'. Prevention includes measures taken to prevent material from becoming waste in the first place.[29] Below, a range of 'management' options lower down concern what to do with material once it becomes waste. Prevention at the top of the hierarchy involves holistic and potentially radical changes to the food system that seek 'reduction at source', including by limiting the overproduction and overconsumption of (surplus) food.[30] Lower-priority or 'weak' prevention refers to re-use, such as redistributing surpluses that would otherwise have been wasted for human consumption. However, as the hierarchy indicates, the reduction of surplus at source should always come first.[31] Some hierarchies consider sending food to animal feed as an example of recycling and thus a form of waste management,[32] although some see this as a form of re-use.[33] Other examples of food waste management include recycling food waste via anaerobic digestion (AD) (which produces biogas and fertiliser), composting, and land spreading. The hierarchy provides that only as a last resort should food be sent for disposal.

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[25] Julian Parfitt, Mark Barthel & Sarah MacNaughton, *Food Waste within Food Supply Chains: Quantification and Potential for Change to 2050* 365 Philosophical Transactions of the Royal Society of London B: Biological Sciences 3065, 3073 (2010). Tom Quested & Andrew Parry, *Household Food Waste in the UK, 2015 (Final Report) (WRAP 2017).* Bojana Bajzelj, William McManus & Andrew Parry, *Food Waste in Primary Production in the UK (Final Report)*, 14 (WRAP 2019).

[26] FAO, *Global Initiative on Food Loss and Waste Reduction*, (2015), https://www.fao.org/3/i7657e/i7657e.pdf; Jenny Gustavsson et al., *Global Food Losses and Food Waste: Extent, Causes and Prevention* (Food and Agriculture Organization of the United Nations 2011).

[27] David Evans, *Blaming the Consumer – Once Again: The Social and Material Contexts of Everyday Food Waste Practices in Some English Households* 21 Critical Public Health 429 (2011); David Evans, *Food Waste: Home Consumption, Material Culture and Everyday Life* (Bloomsbury Academic 2014); Catherine Alexander, Nicky Gregson & Zsuzsa Gille, *Food Waste* in *The Handbook of Food Research* (Anne Murcott, Warren Belasco & Peter Jackson eds.), (Bloomsbury Academic 2013).

[28] Barbara Redlingshöfer, Sabine Barles & Helga Weisz, *Are Waste Hierarchies Effective in Reducing Environmental Impacts from Food Waste? A Systematic Review for OECD Countries* 156 Res., Conservation and Recycling 104723 (2020).

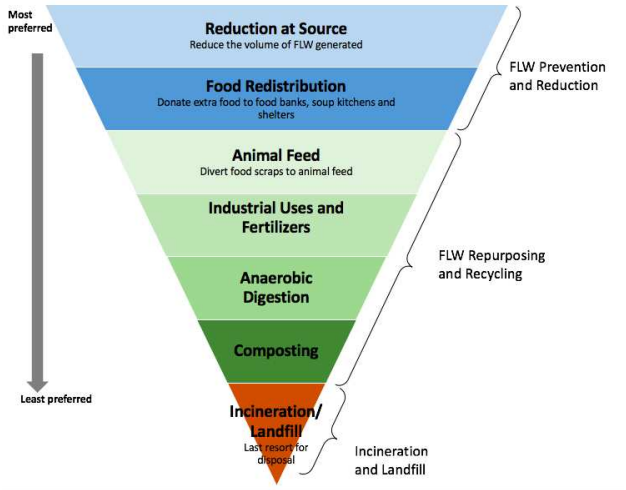
[29] Eloise Scotford, *The New Waste Directive - Trying to Do It All...an Early Assessment* 11 Env't Law Rev. 75 (2009); Eloise Scotford, *Trash or Treasure: Policy Tensions in EC Waste Regulation* 19 J. of Env't Law 367 (2007).

[30] Marie Mourad, *Recycling, Recovering and Preventing "Food Waste": Competing Solutions for Food Systems Sustainability in the United States and France* 126 J. of Cleaner Prod. 461 (2016).

[31] Redlingshöfer, Barles and Weisz, supra note 28 .

[32] Effie Papargyropoulou et al., *The Food Waste Hierarchy as a Framework for the Management of Food Surplus and Food Waste* 76 J. of Cleaner Prod. 106 (2014).

[33] *Food and Drink Waste Hierarchy: Deal with Surplus and Waste (Statutory Guidance)*, Defra (*GOV.UK*, April 1, 2021),https://www.gov.uk/government/publications/food-and-drink-waste-hierarchy-deal-with-surplus-and-waste/food-and-drink-waste-hierarchy-deal-with-surplus-and-waste.



Source: FAO (2016)[34]

(iii) Locations: Where is food wasted on the food supply chain?

A common approach to breaking down the problem of food waste is to consider how much food is wasted in a particular location and identify the relevant causes. For example, it is common to split the food supply chain into five stages: farms, manufacturing, retail, hospitality and food services (HaFS), and households.[35] A distinction is also made between the pre-consumer 'upstream' stage of the supply chain (farms, manufacturing, retail, and pre/in-kitchen HaFS), and the 'downstream' consumption stage (households and 'out-of-home' HaFS post-kitchen).

While thinking of the food supply chain can be useful, food waste can be caused by factors or practices elsewhere in the chain;[36] so it is important not to conflict the *location* of food waste with its *cause*.[37] Some studies therefore differentiate causes of food waste at different 'levels'.[38] For example, causes

[34] FAO. (2019). Code of Conduct (CoC) on Food Loss and Waste (FLW) Reduction https://assets.fsnforum.fao.org/public/files/159_Food_Loss_Waste/DraftAnnotatedOutline_CoC_FLW_EN.docx

[35] Farming (also known as primary production), includes planting crops and rearing livestock, as well as fisheries. Manufacturing (or processing) involves using agricultural products to produce ambient, chilled, and frozen foods, through packaging, preservation, and cooking. Retail includes distribution centres and stores. HaFS includes wholesale distribution, institutional food services (such as canteens in schools, companies, hospitals, residential homes, and prisons); and commercial catering (such as cafes, restaurants, takeaways, and street vendors). *See* Paola Garrone, Marco Melacini & Alessandro Perego, *Opening the Black Box of Food Waste Reduction* 46 Food Pol'y 129 (2014), 5. There are more complex approaches, including separate stages for storage, handling, distribution, and wholesale. *See* Raife Meltem Yetkin Özbük & Ayşen Coşkun, *Factors Affecting Food Waste at the Downstream Entities of the Supply Chain: A Critical Review* 244 J.of Cleaner Prod. 118628 (2020); Massimo Canali et al., *Food Waste Drivers in Europe, from Identification to Possible Interventions* 9 Sustainability, no. 37, 2016, at 1, 5; Garske et al., *supra* note 16 at 5.

[36] Carlos Mena, B Adenso-Diaz and Oznur Yurt, *The Causes of Food Waste in the Supplier–Retailer Interface: Evidences from the UK and Spain* 55 Res., Conservation and Recycling 648 (2011); Canali et al., *supra* note 35.

[37] Alexander, Gregson and Gille, *supra* note 27; Zsuzsa Gille, *From Risk to Waste: Global Food Waste Regimes* 60 The Socio. Rev. 27 (2012).

[38] High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, *Food Losses and Waste in the Context of Sustainable Food Systems* (FAO 2014), https://www.fao.org/3/i3901e/i3901e.pdf.

at the 'micro-level' include stage-specific causes, such as food expiring; a lack of infrastructure and logistics, including poor cold chain management, together with handling, storage, and packaging failures.[39] 'Meso-level' causes are secondary factors that contribute to food waste at the micro-level, such as laws, regulation, and policy on marketing/cosmetic standards, food safety and date labelling, and waste disposal.

The meso-level can also include factors relating to the structure of the supply chain. For example, retail supply chains are highly concentrated, resembling an 'hourglass' at the 'apex' of which are relatively few supermarkets who, as a result, have considerable influence over the behaviour (and food waste) of suppliers and customers.[40] Retail grocery is also highly competitive, and evidence suggests retailers tend to over-order food to seek competitive advantage and customer loyalty through 'on-shelf availability'.[41] This in turn amplifies demand and drives overproduction upstream.[42] It is also well-documented that retailers are able to shift resulting surplus (and its costs) upstream onto farmers and manufacturers (such as through cosmetic/marketing standards and 'unfair' trading practices relating to forecasting, ordering and replenishment) and downstream to homes (such as through promotions and other incentives to over-purchase).[43] Micro- and meso-level causes are in turn affected by systemic factors at the 'macro-level' such as the relatively 'cheap' price of food,[44] with some arguing that food waste is a symptom of a 'broken food system'.[45]

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[39] See e.g. Canali et al., *supra* note 35; Carmen Priefer, Juliane Jörissen & Klaus-Rainer Bräutigam, *Food Waste Prevention in Europe – A Cause-Driven Approach to Identify the Most Relevant Leverage Points for Action* 109 Res., Conservation and Recycling 155 (2016).

[40] Stephen D Porter, *Food Waste in the UK and EU: A Policy and Practice Perspective* in *Routledge Handbook of Food Waste* (Christian Reynolds et al.eds.), (1st ed., Routledge 2020); Felicitas Schneider and Mattias Eriksson, *Food Waste (and Loss) at the Retail Level* in *Routledge Handbook of Food Waste* (Christian Reynolds et al. eds.), (1st ed., Routledge 2020); Sarina Macfadyen et al., *The Role of Food Retailers in Improving Resilience in Global Food Supply* 7 Glob. Food Sec. 1 (2015); Simone Piras et al., *Unfair Trading Practice Regulation and Voluntary Agreements Targeting Food Waste: A Policy Assessment in Select EU Member States* (REFRESH 2018); Bree Devin & Carol Richards, *Food Waste, Power, and Corporate Social Responsibility in the Australian Food Supply Chain* 150 J. of Bus. Ethics 199 (2018); M Bond et al., *Food Waste within Global Food Systems* (Global Food Security Progamme 2013).

[41] Camila Colombo de Moraes et al., R*etail Food Waste: Mapping Causes and Reduction Practices*, 256 Journal of Cleaner Production 120124 (2020); Christoph Glatzel et al., *The Secret to Smarter Fresh-Food Replenishment? Machine Learning* (McKinsey 2016); Ranjan Ghosh & Mattias Eriksson, *Food Waste Due to Retail Power in Supply Chains: Evidence from Sweden* 20 Glob. Food Sec. 1 (2019).

[42] *Id.*

[43] Schneider & Eriksson, *supra* note 40; Devin &Richards *supra* note 40; Joanne Swaffield, David Evans & D Welch, *Profit, Reputation and "Doing the Right Thing": Convention Theory and the Problem of Food Waste in the UK Retail Sector* 89 Geoforum 43 (2018); Daniel Welch, Joanne Swaffield & David Evans, *Who's Responsible for Food Waste? Consumers, Retailers and the Food Waste Discourse Coalition in the United Kingdom* 21 J. of Consumer Culture 236 (2021); Ghosh & Eriksson *supra* note 41); Edd Colbert, *Causes of Food Waste in International Supply Chains, 16* (Feedback, Rockefeller Foundation 2017), https://feedbackglobal.org/wp-content/uploads/2017/02/Causes-of-food-waste-in-international-supply-chains.pdf; McRae et al, *Making Better Use of What we Have: Strategies to Minimize Food Waste and Resource Inefficiency in Canada* 3 Can. Food Stud. 145 (2016).

[44] Benton & Bailey, supra note 11; World Bank Group, *Addressing Food Loss and Waste: A Global Problem with Local Solutions* (International Bank for Reconstruction and Development / The World Bank 2020), https://openknowledge.worldbank.org/bitstream/handle/10986/34521/Addressing-Food-Loss-and-Waste-A-Global-Problem-with-Local-Solutions.pdf?sequence=1&isAllowed=y> accessed 16 October 2020.

[45] Tim Lang, *Food Waste Is the Symptom, Not the Problem* The Conversation (June 25, 2013), http://theconversation.com/food-waste-is-the-symptom-not-the-problem-15432.

3. Country Case Studies

(i) UK[46]

How is food waste defined and how much is wasted?

Similarly to the FLW Protocol, the UK's non-binding reporting guidelines include a definition of food waste by reference to a list of 'waste definitions'.[47] For example, food sent to AD, composting, incineration, landfill, not harvested, or ploughed-in, is defined as 'food waste'. Any material sent for redistribution to people, animal feed, or conversion into industrial products is collectively referred to as 'food surplus'. This is not uncontroversial, as some would class sending food for animal feed as a form of waste recycling, not surplus redistribution.[48] More positively, the guidelines acknowledge the difficulties in distinguishing between food 'loss' and 'waste' by simply using 'food waste' to cover all food removed from the entire farm-to-fork supply chain. The terminology 'avoidable', 'possibly avoidable', and 'unavoidable' food waste is also helpfully dispensed with by adopting a binary edible/inedible food waste distinction.

There is also a legal definition of 'waste', meaning 'any substance or object which the holder discards or intends or is required to discard'.[49] This definition determines when a range of regulatory obligations attaching to waste (including food waste) apply, while also underpinning the award of renewable subsidies for energy from 'waste'.[50] However, the legal definition of waste does not distinguish between edible/inedible food, so that surplus edible food *in law* becomes 'waste' at the point of actual, intended or required discard.[51]

The UK wastes an estimated 9.5 Mt of food waste ever year in the 'post-farm gate' supply chain, 1.5 Mt of which is wasted in manufacturing, 0.3 Mt in retail, 1.1 Mt in HaFS, and 6.6 Mt in households.[52] Because of a lack of comparable estimates, food wasted on farms is estimated and reported separately at 1.6 Mt annually (with an estimated range of 0.9-3.5 Mt due to uncertainties associated with the data). This suggests that more food waste arises in UK primary production than retail and HaFS combined. In view of the upper estimate range, potentially more food is wasted on farms than in the rest of the pre-consumer supply chain.

How is food waste tackled?

UK Governments across the political spectrum have adopted a 'voluntary approach' to food waste prevention for over 20 years.[53] This voluntary approach is centred around the work of WRAP. WRAP was established by government in 2000, initially as a not-for-profit company, but is now a registered

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[46] Waste in the UK is devolved to the constituent nations. This chapter focuses primarily on England, although some measures have UK-wide application.

[47] WRAP-IGD, *Food Surplus and Waste Measurement and Reporting - UK Guidelines* (WRAP 2020), https://wrap.org.uk/sites/default/files/2020-10/Food-surplus-and-waste-measurement-and-reporting-UK-guidelines.pdf.

[48] Papargyropoulou et al., *supra* note 32.

[49] Environmental Protection Act 1990, s 75 (U.K.).

[50] Bradshaw, *supra* note 17.

[51] *Id.*

[52] WRAP, *Food Surplus and Waste in the UK – Key Facts* (WRAP 2022), https://wrap.org.uk/sites/default/files/2023-01/Food%20Surplus%20and%20Waste%20in%20the%20UK%20Key%20Facts%20December%202022.pdf.

[53] Including the left-wing Labour government (1997-2010), the Conservative/Liberal Democrat coalition (2010-15) and several right-wing Conservative administrations (2015-onwards).

charity[54] and self-described 'climate action NGO'.[55] WRAP receives most of its income from government.[56]

WRAP leads collaborative food waste activities centred initially around the Courtauld the Commitments, a suite of voluntary agreements. Over five iterations—Courtauld 1 (2005-2010), Courtauld 2 (2010-12), Courtauld 3 (2013-15), Courtauld 2025 (2015-25) and Courtauld 2030 (2025-30)—the Courtauld Commitments have set out progressive, *non-binding* targets for post-farm gate food waste reduction. Over time, these targets have ramped up in ambition to align with the 2030 deadline for SDG 12.3. While the targets do not extend to food wasted on farms, there is an expectation that businesses will act in this area. Earlier Courtauld iterations involved 'signatories' signing up to the Commitments, although later versions of Courtauld moved to a fee-paying model with 'members'.[57] The number and type of Courtauld signatories/members have increased over time, now comprising retailers, brands, and suppliers, together with those in the farming, hospitality and local government sectors.[58] With the change to a membership model, Courtauld is also complemented by the *Food Waste Reduction Roadmap*, which calls for *all* food businesses to adopt the 'Target, Measure, Act' approach.[59] Under this, businesses are expected to report publicly on measured food waste reductions against self-set targets which, ideally, align with SDG 12.3. Notably, however, the Courtauld targets are national, covering food waste generated beyond Courtauld signatories/members and *Roadmap* participants. Businesses are encouraged (but not required) to report their food waste publicly. Many provide data confidentially to WRAP, who then reports progress against the national targets on an 'aggregated basis'.

The heartbeat of WRAP's work under Courtauld and the *Roadmap* is collaboration. For example, as part of Courtauld, signatories/members work together with WRAP to deliver the food waste reduction targets. Central to this are a series of 'Working Groups' that bring together actors from across the supply chain to collaborate within a 'pre-competitive space'.[60] WRAP also works with other agencies to support food waste reductions by, for example, providing guidance[61] and framework agreements,[62] as well distributing grant funding for surplus food redistribution. A key part of WRAP's strategy is working with a small number of large retailers to drive reductions both in the home, and in the supply chain.[63] For example, early iterations of Courtauld focussed on reducing household food waste *through* action by retailers, particularly the 'Love Food Hate Waste' public awareness campaign. Later iterations of Courtauld, together with the *Roadmap*, extended to reducing food waste in manufacturing, retail, and hospitality.[64] However, with retailers are again central in driving reductions, particularly though Whole Chain Food Waste Reduction Plans (WCPs). WCPs bear resemblance to

[54] WRAP, About Us | WRAP (2022), https://wrap.org.uk/about-us.
[55] WRAP, 'What We Do | WRAP' (2022) <https://wrap.org.uk/what-we-do.
[56] WRAP, About Us | WRAP (2022), https://wrap.org.uk/about-us.
[57] Andre David Pringle, *Overproduction in England's Retail Food Chain: A Challenge for the Regulation of Food Waste*, 185 (PhD Thesis, University of York 2021).
[58] *Courtauld Commitment 2030 Signatory Gallery*, *WRAP*, https://wrap.org.uk/taking-action/food-drink/initiatives/courtauld-commitment/courtauld-commitment-2030-signatory-gallery.
[59] IGD and WRAP, *Target. Measure. Act. The Food Waste Reduction Roadmap Toolkit* (WRAP 2018).
[60] Pringle, *supra* note 58.
[61] WRAP, FSA and Defra, *Labelling Guidance: Best Practice on Food Date Labelling and Storage Advice* (2017); WRAP, FSA and Defra, *Redistribution Labelling Guide* (WRAP 2020), https://wrap.org.uk/sites/default/files/2020-07/WRAP-surplus-food-redistribution-labelling-guide-May-2020.pdf.
[62] WRAP, *Redistribution Framework* (WRAP 2016); Agreement to supply / receive food past 'Best Before' date.
[63] Carrie Bradshaw and Jonathan Wentworth, *Food Waste* (Parliamentary Office of Science and Technology, *forthcoming*).
[64] *Food Waste Reduction Roadmap* (*WRAP*, 2022), https://wrap.org.uk/taking-action/food-drink/initiatives/food-waste-reduction-roadmap.

voluntary environmental management systems,[65] and seek to embed food waste reduction into business culture and supply chain operations.[66] Through WCPs, retailers are expected to lead on cascading reductions throughout the supply chain,[67] supported by various toolkits generated by WRAP.[68]

While the UK is often seen as having pioneered a 'voluntary approach' to food waste, there are some mandatory obligations of relevance. For example, the waste hierarchy constitutes a legal obligation for businesses, who must take all reasonable measures to apply the hierarchy.[69] That said, how the waste hierarchy as a legal obligation might be enforced with respect to food remains an ongoing conundrum.[70] In addition, while a softer approach has been taken to waste prevention, direct regulation and economic instruments apply to waste *management*. For instance, several regulatory obligations apply to businesses handling, transporting, recovering, and/or treating 'waste'. There are also pricing mechanisms that support landfill diversion, including a tax on sending biodegradable municipal waste (including food) to landfill, and renewable energy subsidies for energy from waste, including AD.[71] It was anticipated that this would be further supported in 2023 by mandatory separate collection of food waste from all homes, businesses, and organizations,[72] although the timeline for this has been delayed.[73] There are also binding obligations under the Groceries Supply Code of Practices (GSCOP) that require designated retailers to deal fairly with their direct suppliers.[74] Some consider these obligations to have the potential to reduce food waste by regulating retailer practices (such as demand forecasting) associated with overproduction.[75] However, one study found that GSCOP's influence on practices related to food waste is limited.[76]

In 2018, there was also an apparent policy shift against the voluntary approach, with government outlining a 'new' legislative approach to food waste prevention.[77] Possible measures included mandatory food waste reporting, mandatory food waste reduction targets, and new regulations to address unfair trading practices associated with food waste in the supply chain. However, at the time of writing, none of these has been implemented.

Where are measures targeted?

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[65] Cary Coglianese, *The Managerial Turn in Environmental Policy* 17 NYU Env't Law J. 54, 55–56 (2008); C Strotmann et al., *A Participatory Approach to Minimizing Food Waste in the Food Industry-A Manual for Managers* 9 Sustainability 66 (2017); Martin Gooch & Abdel-Samie Felfel, *Processing and Distribution* in *Routledge Handbook of Food Waste (*Christian Reynolds et al. eds.) (1st ed., Routledge 2020).

[66] WRAP and IGD, *The Food Waste Reduction Roadmap - Progress Report 2021* (WRAP 2021) 5, https://wrap.org.uk/sites/default/files/2021-09/WRAP-Food-Waste-Reduction-Roadmap-Progress-Report-2021.pdf.

[67] Pringle, *supra* note 58 at 194–95.

[68] *Whole Chain Food Waste Reduction Plan Toolkit | WRAP*, https://wrap.org.uk/resources/tool/whole-chain-food-waste-reduction-plan-toolkit.

[69] Waste Regulations 2011, SI 2011/988, reg 12 (Eng. and Wales).

[70] Bradshaw, *supra* note 17..

[71] *Id.*

[72] Environment Act 2021, s 57 (U.K.).

[73] Lisa Gilligan & Kirstin Roberts, *Mandatory Separate Food Waste Segregation for All Businesses in 2023* (*Freeths*, 17 April 2023), https://www.freeths.co.uk/2023/04/17/mandatory-separate-food-waste-segregation-for-all-businesses-set-to-come-into-force-from-2023/; Joshua Nevett, *Bin Collection: Council Anger over Delay until after next Election*, BBC News (July, 31 2023), https://www.bbc.com/news/uk-politics-66363568.

[74] Groceries (Supply Chain Practices) Market Investigation Order 2009 (U.K.).

[75] Piras et al., *supra* note 40.

[76] Pringle, *supra* note 58.

[77] HM Government, *Our Waste, Our Resources: A Strategy for England* (Crown Copyright 2018).

Measures to tackle food waste in the UK largely fail to prioritize waste prevention at the top of the hierarchy, with a notable lack of measures to reduce overproduction and surplus 'at source'. Like other jurisdictions, direct regulation and economic instruments have targeted waste management rather than prevention.[78] Some describe this as a tendency to 'move up' the waste hierarchy, rather than prioritizing prevention through equivalent measures or incentives. This can also harm prevention efforts, with subsidies for AD shown to have undermined surplus redistribution efforts.[79] As has been demonstrated elsewhere, the legal definition of waste has added to these problems, including by allowing the award of subsidies for edible (not just inedible) food waste.[80] Similarly, efforts under the 'voluntary approach' have also failed to prioritize waste prevention at source, with a reliance on surplus redistribution to reach the Courtauld targets.[81]

The UK approach has also largely focused on tackling food wasted by households, to the detriment of food waste elsewhere in the supply chain.[82] For example, the Courtauld targets apply to the post-farm gate supply chain only, so that the potentially large quantities of food wasted on farms are excluded from scope. Moreover, under the proposed 'legislative' approach, tackling overproduction and waste on farms has been described as the policy 'elephant in the room'.[83] For example, new (but unused) powers to tackle unfairness in the supply chain are expected to help farmers redistribute (rather than reduce) surplus.[84] And the proposal to mandate food waste measurement and reporting also excluded food wasted in primary production.[85]

(ii) Canada[86]

How is Food Waste Defined, and how much is wasted?

While the federal Ministry of Agriculture and Agrifood Canada (AAFC) has defined food waste as "all food that is grown, harvested, processed, manufactured or prepared for human

[78] Julia Szulecka, Carrie Bradshaw & Ludovica Principato, *Unpacking Food Waste Reduction Governance in Europe: Actors, Steering Modes, and Sustainability Ambitions* (*forthcoming*).
[79] Joanne Swaffield, David Evans & D Welch*, Profit, Reputation and "Doing the Right Thing": Convention Theory and the Problem of Food Waste in the UK Retail Sector 89 Geoforum 43 (2018);* Bradshaw, supra note 17*;* Shova Thapa Karki, Alice CT Bennett & Jyoti L Mishra, *Reducing Food Waste and Food Insecurity in the UK: The Architecture of Surplus Food Distribution Supply Chain in Addressing the Sustainable Development Goals (Goal 2 and Goal 12.3) at a City Level* 93 Indus. Mktg. Mgmt. 563 (2021).
[80] Bradshaw, *supra* note 17.
[81] Pringle, *supra* note 58.
[82] Porter, *supra* note 40; Alexander, Gregson & Gille *supra* note 27; Evans *supra* note 27.
[83] Bradshaw, *supra* note 7 at 321.
[84] *Id.* The powers are contained in the Agriculture Act 2020, s 29 (U.K.).
[85] Defra, *Food Waste Measurement and Reporting for Food Businesses in England - Impact Assessment* (Defra 2022), https://consult.defra.gov.uk/environmental-quality/improved-reporting-of-food-waste/supporting_documents/Impact%20Assessment_Improved%20Food%20Waste%20Reporting%202022.pdf; Defra, *Summary of Responses and Government Response: Improved Food Waste Reporting by Large Food Businesses in England* (Crown Copyright 2023), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1174377/Summary_of_responses_and_government_response_food_waste_reporting_July_2023.pdf.
[86] Before colonization, Turtle Island had a vast range of food systems over millennia. While Indigenous food sovereignty and food systems are beyond the scope of this chapter, they have a great deal to teach about sustainability, human-earth relationships, and circular economies.*See e.g., Indigenous Food Systems (*Priscilla Settee & Shailesh Shukla eds.) (Canadian Scholars, 2020). This case study only assesses the settler legal system at the federal level.

consumption, but never eaten by people,"[87] there is no legal definition of food waste federally. The terms food waste, food loss, and food loss and waste are found in various documents.[88]

While numbers vary, estimates are that 58% of food is wasted annually in Canada,[89] or 35.5 million metric tonnes.[90] This generates 56.5 million tonnes of CO2e,[91] and **$**49.5 billion in economic loss.[92] Breakdowns of where this occurs along the food chain vary significantly. The National Zero Waste Council[93] says that 47% is wasted at the consumer stage, while food rescue NGO Second Harvest estimates that 24% is wasted at production, 34% at processing, 13% at manufacturing, 2% at distribution, 4% at retail, 14% at the household level and 9% at HRI.[94] These discrepancies increase the challenges of developing well-targeted laws and policies.

How is Food Waste Tackled?

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[87] Impact Canada, *Food Waste Reduction Challenge: Business Models*, , https://impact.canada.ca/en/challenges/food-waste-reduction-challenge.

[88] Other levels of government have their own approaches. For example, Ontario's provincial Food and Organic Waste Framework defines it as "the edible parts of plants and animals that are produced or harvested but that are not ultimately consumed." *Ontario's Food And Organic Waste Framework: Action Plan*, https://files.ontario.ca/food_and_organic_waste_framework.pdf.

[89] Lori Nikkel et al., *The Avoidable Crisis of Food Waste: Roadmap*, Second Harvest and Value Chain Management International at 5 (2019), https://www.secondharvest.ca/getmedia/73121ee2-5693-40ec-b6cc-dba6ac9c6756/The-Avoidable-Crisis-of-Food-Waste-Roadmap.pdf.

[90] ". . . of which 11.2 million metric tonnes (32%) is avoidable"*Id.* at 5. The CEC estimates it at 13 million tonnes when including "all stages of the food supply chain, including the pre-harvest and consumer stages", Commission for Environmental Cooperation (CEC), Characterization and Management of Food Loss and Waste in North America at vii (Montreal, Canada, 2017) http://www.cec.org/files/documents/publications/11772-characterization-and-management-food-loss-and-waste-in-north-america-en.pdf. *See also*, Waste Reduction and Management Division, Environment and Climate Change Canada. *Taking Stock: Reducing Food Loss and Waste in Canada,* (2019) https://www.canada.ca/en/environment-climate-change/services/managing-reducing-waste/food-loss-waste/taking-stock.html.

[91] For lower estimates, *see,* Alex Boston (Boston Consulting) and Belinda Li and Tamara Shulman (Tetra Tech). 'Food Waste Management + Climate Action:
National GHG Reduction Potential' (Feb. 2017) https://nzwc.ca/Documents/FoodWasteClimateChange-Report.pdf#search=Boston%20Consulting%20and%20Tetra%20Techhttp://www.nzwc.ca/Documents/CuttingFoodWasteandGreenhouseGasEmissions-ExecutiveSummary.pdf. For higher estimates, *see*, Sameed Naushad, *Food Waste in Canada*, Youth in Food Systems, https://seeds.ca/schoolfoodgardens/food-waste-in-canada/.

[92] Lori Nikkel et al., *supra* note 93 at 5.
Others put the total at "up to $100 billion annually": National Zero Waste Council, *The Issue: The High Cost of Food Waste,* http://www.nzwc.ca/focus-areas/food/issue/Pages/default.aspx. "In Canada, $49 billion worth of food is sent to landfill or composted each year. If the value of inputs required to grow this food were included, such as water, power, labour, etc., the dollar figure would rise to over $100 billion," *id.,* while others put it as low as $17 billion. *See*, Sameed Naushad, *Food Waste in Canada*, Youth in Food Systems, https://seeds.ca/schoolfoodgardens/food-waste-in-canada/.

[93] NZWC is "a leadership initiative bringing together governments, businesses and non-government organizations to advance waste prevention and the circular economy in Canada." National Zero Waste Council, *A Food Loss and Waste Strategy of Canada* (2018), http://www.nzwc.ca/Documents/NZWC-FoodLossWasteStrategy-EN.pdf.

[94] Hotels, restaurants and institutions. Lori Nikkel et al., *supra* note 93 at 5.

Tackling food waste is highly decentralized in Canada. Federally, food governance is separated among several ministries.[95] The federal government structure also spreads food and waste governance across federal, provincial, and municipal levels, which result in gaps and overlaps. Canada is committed to SDG12.3, so 50% reduction by 2030 is the national target. However, there is no federal legislation specifically addressing food waste, and no enforceable mandates to measure[96] and act on food waste.[97] The government refers to the food waste hierarchy in various documents.[98] There seem to be two main drivers for tackling food waste in Canada: environmental and climate harms, and food insecurity.[99] Both are serious problems in Canada and unjustly distributed.[100] AAFC recognizes the multiple benefits of tackling food waste: "we can increase food availability, save consumers and businesses money, reduce greenhouse gas emissions, and strengthen our food systems."[101]

The Ministry of Environment and Climate Change (ECCC) has also begun working on the issue,[102] notably with its 2019 report *Taking Stock,*[103] which summarizes approaches taken by other levels of government and other sectors at several stages on the food chain. In terms of direct federal action, the government has launched a variety of policy and financial measures addressing food waste. This includes investments such as the Food Waste Reduction Challenge (from 2021-23 with a total investment of $20 million), designed to promote innovation, with four streams tackling (i) preventing, (ii) diverting and (iii) transforming food waste, as well as (iv) extending the life of food, respectively.[104] The government also invests

[95] Including the Ministries of Agriculture and Agrifood Canada, Industry, Health, and Environment and Climate Change Canada.

[96] "A standard methodology for quantification of food loss and waste (FLW) in North America has not yet been developed," CEC supra note 94 at 11.; Chloe Alexander, Monitoring and Measuring Food Loss and Waste in Canada: A Snapshot,Arrell Food Institute, University of Guelph (2022) https://arrellfoodinstitute.ca/wp-content/uploads/2022/10/2022_FOOD-WASTE-REPORT_ARRELL_WEB.pdf at 20 cites the WRI's FLW Protocol, and NZWC's 2018 waste measurement guide for households in Canada; National Zero Waste Council, How to Measure Food Waste(June 2018), http://www.nzwc.ca/Documents/LFHW_GuideToMeasuringFoodLossAndWaste.pdf. The CEC also refers to the WRI FLW Accounting and Reporting Standard in its report, CEC, *supra* note 94 at 20.

[97] The federal government "currently has no baseline and a limited ability to measure its progress in reaching this goal," Alexander, *supra* note 100 at 18.

[98] Impact Canada, supra note 91; CEC, s*upra* note 94. There is also recognition that "[w]hile the food recovery hierarchy provides a clarifying model for managing FLW, approaches at different tiers of the hierarchy can compete with one another, resulting in loss of benefits (Mourad 2016). For example, investing in food recycling solutions such as compost collection may disincentivize source reduction." *Id.* at 5.

[99] Impact Canada, supra note 91. challenge.

[100] In 2017-18 it affected 12.7% of households, with much higher numbers among Indigenous peoples and other marginalized groups. Olivier De Schutter, UN Special Rapporteur on the Right to Food, Visit to Canada from 6 to 16 May 2012, End of Mission Statement (May 16, 2012); *see also*, Nadia Lambek, Social Justice in the Food System in *Food Law and Policy in Canada* at 329-330 (Lee, McLeod-Kilmurray & Chalifour, eds.), (Carswell, 2019).

[101] Impact Canada, supra note 91. challenge.

[102] Government of Canada, *Food loss and waste*, (undated) https://www.canada.ca/en/environment-climate-change/services/managing-reducing-waste/food-loss-waste.html.

[103] Environment and Climate Change Canada, supra note 94.

[104] *Food Waste Reduction Challenge: Business Models*, Impact Canada, https://impact.canada.ca/en/challenges/food-waste-reduction-challenge.

in individual projects, such as for landfill emissions (e.g. anaerobic digestion and compost treatment facilities).[105]

To fill in the gaps in law at the federal level, there are numerous voluntary measures and collaborations. In the private sector, Canada's leading retailers "announced in 2019 a voluntary commitment to measure, monitor, and act on reducing food loss and waste to 50% by 2025."[106] Several of these same corporations are members of the 10x20x30 Initiative[107] of the Consumer Goods Forum's global Food Waste Coalition of Action, which "catalyzes a 'whole chain' approach to fighting food loss and waste and supports upstream food loss and waste reduction."[108] Coalition members committed to the "'Target-Measure-Act' approach… pioneered by Champions 12.3."[109] These initiatives use the global Food Loss and Waste Accounting and Reporting Standard of the WRI[110] to achieve consistency and transparency.

Food Waste NGOs also play an important role in Canada.[111] In 2018, in the absence of a federal policy, the National Zero Waste Council created a *Food Loss and Waste Strategy for Canada* "built around three pillars: national, provincial and local policy change; innovation in technology and community infrastructure; and behaviour change throughout the supply chain."[112] Referring to the food waste hierarchy, it recognizes that "[a]t the top of the list is preventing and reducing the volume of surplus food that is generated in the first place,"[113] and notes that this is also the cheapest approach, potentially reducing food prices by 10-20%.[114] NZWC argues that "a systems approach [is needed] to ensure that unintended consequences do not emerge that simply relocate costs or impacts."[115] This would require a

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[105] *See e.g.,* Government of Canada invests $11.4 million in climate action projects to reduce emissions from food waste, News Release, Government of Canada (Sept.29, 2022), https://www.canada.ca/en/environment-climate-change/news/2022/09/government-of-canada-invests-114million-in-climate-action-projects-to-reduce-emissions-from-food-waste.html.

[106] *Food Industry Leaders Commit To Tackle Food Waste in Canada*, Media Release, National Zero Waste Council http://www.nzwc.ca/media/releases/MediaReleases/20190117-NZWCPCMediaRelease-IndustryFoodWasteCommitment.pdf.

[107] This "brings together 10+ of the world's largest food retailers and providers, each engaging at least 20 suppliers to halve food loss and waste by 2030".*10x20x30*, Champions 12.3, https://champions123.org/10-20-30.

[108] *Id.*

[109] *Id.*

[110] WRI, supra note 20.

[111] Among the leaders are the National Zero Waste Council (http://www.nzwc.ca), Second Harvest (https://secondharvest.ca/), Provision Coalition (https://provisioncoalition.com/) and Value Chain Management International (https://vcm-international.com/food-waste/).

[112] National Zero Waste Council, *A Food Loss and Waste Strategy of Canada* (2018), http://www.nzwc.ca/Documents/NZWC-FoodLossWasteStrategy-EN.pdf.. It also submitted "Reducing Food Waste & Cutting Canada's Carbon Emissions: Policies for Reaping the Environmental, Economic and Social Benefits" (2016) (http://www.nzwc.ca/Documents/NZWCSubmissionOnPan-CanadianFrameworkForCombattingClimateChange.pdf) to the federal government in relation to the *Pan-Canadian Framework on Clean Growth and Climate Change*, https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework.html.

[113] National Zero Waste Council, *A Food Loss and Waste Strategy of Canada* at 9 (2018), http://www.nzwc.ca/Documents/NZWC-FoodLossWasteStrategy-EN.pdf.

[114] *Id.*

[115] *Id.* at 10.

stronger federal role.[116] NZWC also targets consumers with its Love Food Hate Waste campaign.[117]

There are also private sector and NGO collaborations. Second Harvest teamed with the Value Chain Management Centre and private sector players on *The Avoidable Crisis of Food Waste* in 2019.[118] It details actions plans for industry, industry organizations and government to tackle prevention, redistribution and management of food waste, focusing on measuring, leading and enabling. Regionally, the trilateral Commission for Environmental Cooperation under CUSMA created a "Practical Guide" to measure food waste, among other tools.[119]

In terms of redirecting surplus food, AAFC launched a $50 million Surplus Food Rescue Program during COVID,[120] though not without criticism.[121] Several provinces have legal protection to encourage food donations,[122] and there are some tax incentives,[123] although awareness could be significantly enhanced.[124]

By contrast to the lack of federal laws and policies directly tackling food waste, there are seemingly unrelated federal laws and policies that affect the food waste problem or represent failed opportunities to link food waste to other policy priorities. For example, in relation to climate change, agriculture and landfill waste are usually addressed as separate issues, as they are in the overarching federal climate change plan.[125] There is no federal requirement for organics waste diversion although some provinces and cities have such targets. The federal government meanwhile is "developing regulations to ensure consistency and stringency across the country."[126] The Federal Sustainable Development Strategy mentions food waste but simply refers to existing initiatives such as the Food Waste Reduction

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[116] NZWC calls for this to include "A per-capita national target, with a sub-target index for retail businesses, manufacturers, and consumers." *Id.* at 12.

[117] National Zero Waste Council, *Food Waste in the Home,* https://lovefoodhatewaste.ca/about/food-waste/?utm_source=google&utm_medium=cpc%20EN&utm_campaign=Food%20Waste%20In%20Canada&gclid=EAIaIQobChMI4ImForfU_AIVFMmUCR2toQLGEAAYASAAEgLt3PD_BwE.

[118] Lori Nikkel et al., *supra* note 93.

[119] Food in Canada staff, *CEC launches a practical guide for measuring food loss. + waste (FLW), Food in Canada (Mar.12, 2019),* https://www.foodincanada.com/research-and-development/cec-launches-a-practical-guide-for-measuring-food-loss-waste-flw-141300/.

[120] *Surplus Food Rescue Program*, Government of Canada (Aug. 13, 2020), https://www.canada.ca/en/agriculture-agri-food/news/2020/08/surplus-food-rescue-program.html.

[121] Graham Riches, *CANADA: Prof says food banks should be eliminated, Basic Income implemented post-COVID-19*, The Conversation, republished in Ottawa City News (Sept. 27, 2020), https://ottawa.citynews.ca/coronavirus-covid-19-national-news/canada-prof-says-food-banks-should-be-eliminated-basic-income-implemented-post-covid-19-2705394

[122] E.g. *Donation of Food Act, 1994*, SO 1994, c. 19 (Ont..), https://www.ontario.ca/laws/statute/94d19.

[123] E.g., Ontario's *Local Food Act, 2013,*https://www.ontario.ca/page/community-food-program-donation-tax-credit-farmers (including non-refundable income tax credit for farmers).

[124] National Zero Waste Council, *Food Donation and Civil Liability in Canada*, National Zero Waste Council (Apr. 2018) http://www.nzwc.ca/Documents/FoodDonation-LiabilityDoc.pdf.

[125] The *Pan-Canadian Framework on Climate Change, supra* note 116. *See also,* Environment and Climate Change Canada, *Canada's Methane Strategy* (Sept. 2022) https://publications.gc.ca/collections/collection_2022/eccc/En4-491-2022-eng.pdf.

[126] See https://hillnotes.ca/2022/06/09/global-methane-pledge-reducing-methane-emissions-in-canada/..

Challenge.[127] Canada's 2030 GHG Emissions Reduction Plan[128] does not address food waste in the section on agriculture,[129] while the section on waste[130] only addresses how to handle food waste once it exists (e.g. by diverting it to animal feed, biofuels).

Other federal policies could tend to increase, rather than reduce, food waste. For example, federal animal transport laws are such that "over 1.5 million animals are either injured or killed in transport each year."[131] There are restrictions on diverting food waste to animal feed.[132] In keeping with Canada's growth model for agrifood, and particularly exports, some subsidies in the agrifood system can lead to food waste. Food labelling is also a factor, due to confusion over "'best before', 'use by', 'sell by' and 'expiry' dates."[133]

Within the private sector, several policies drive food waste. Retailers often only accept Grade One or Two produce, consigning imperfect fruits and vegetables to either not be harvested or be thrown out by stores, although efforts to promote "ugly food" are being seen.[134] Another issue is that vendor supply agreements can "include a clause stating that excess products must be destroyed" rather than donated.[135] Also, retailers seeking to maintain on-shelf availability can lead to waste.[136] Second Harvest argues that:

> "the competitive landscape often creates an obstacle to share data, plan and execute collaboratively ... This lack of collaboration results in ineffective forecasting, planning and replenishment and consequently overproduction throughout the value chain."[137]

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[127] *Supra* note 91.
[128] Government of Canada, *2030 Emissions Reduction Plan: Clean Air, Strong Economy*, https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/emissions-reduction-2030.html.
[129] *Id.* at section 2.7, https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/emissions-reduction-2030/plan/chapter-2.html#toc10.
[130] *Id.* at section 2.8, https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/emissions-reduction-2030/plan/chapter-2.html#toc11.
[131] Animal Justice, *Animals Suffer & Die Due to Canada's Weak Animal Transport Rules*, Animal Justice (Nov. 15, 2022), https://animaljustice.ca/blog/2022-farmed-animal-transport-incidents (citing CFIA numbers). However, the 2019 federal budget earmarked $50 million over 5 years to AASFC to "develop a 'local infrastructure fund' to support farmers' markets, food banks and community driven food-related projects" to support efforts toward strengthening the local food system *See* Environment and Climate Change Canada, *supra* note 94 at 9.
[132] *Food Policy for Canada*, YorkU, https://foodpolicyforcanada.info.yorku.ca/goals/goal-5/food-waste/efficiency/#anchor3.
[133] *See* NZWC *supra* note 117 at 12; Environment and Climate Change Canada, *supra* note 94. In 2017, some multinational food companies signed on to standardize food labels by 2020.*Call to Action to Standardize Food Date Labels Worldwide by 2020*, Champions 12.3, https://champions123.org/sites/default/files/2020-09/champions-123-call-to-action-to-standardize-food-date-labels-worldwide-by-2020.pdf. Recently, the government has been asked to study the effects of best before date food labels on food waste at the consumer level. Standing Committee on Agriculture and Agri-Food, *Grocery Affordability: Examining Rising Food Costs in Canada*, Report of the Standing Committee on Agriculture and Agri-Food at 17 (June 2023): https://www.ourcommons.ca/DocumentViewer/en/44-1/AGRI/report-10.
[134] CBC News, *Eating 'ugly produce' could cut food waste – and your grocery bill*, CBC News (Feb, 02, 2023), https://www.cbc.ca/news/science/what-on-earth-ugly-produce-food-waste-1.6734857.
[135] Nikkel et al., *supra* note 93 at 13.
[136] *Id.* at 14.
[137] *Id.* at 21.

Canada has a supply management system for a few key commodities,[138] but such intense control of supply and demand is unlikely to be adopted across the food chain.

Where are measures targeted?

In Canada, efforts to tackle food waste are emerging but face the barriers of federalism, lack of coordination, and a disconnect between agricultural policies and waste policies. Agriculture, particularly staples for export, have been a backbone of the Canadian settler economy. The 2017 federal budget set a target to "grow Canada's agri-food exports to at least $75 billion annually by 2025".[139] The agrifood lobby is powerful,[140] and the food system is highly industrialized and concentrated.[141] Until recently, food waste has been seen more as a problem of economic inefficiency than an environmental or food justice issue. Canada has so far fallen into the Prevention Paradox,[142] where investments in waste management, technology and infrastructure turn attention and solutions away from reducing surplus production. Incentivizing retail and consumer food donation has a similar effect. There are few attempts to determine how and why agriculture policies and programs promote surplus food production.[143] Canada also has some "systemic lock-ins".[144] The federal government itself recognizes that "analysis would be strengthened through consideration of the economic and marketing systems of Canada's food supply and the potential for these systems to influence food loss and waste."[145] There is no federal harmonization of food export targets, climate mitigation policies, bans on organic materials in landfills or organics recycling infrastructure. Despite the vast potential to leap forward on Canada's Paris commitments by tackling it, NZWC's goal of having "all players [engaged] in an integrated, national, food waste reduction strategy"[146] is still a long way off in Canada.

(iii) Brazil

How is food waste defined and how much is wasted?

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[138] Dairy, chicken and turkey products, table eggs and broiler hatching eggs. *See* Khamla Heminhavong, *Canada's Supply Management System: Background Paper*, Library of Parliament, 1 (Nov. 30, 2018) https://lop.parl.ca/staticfiles/PublicWebsite/Home/ResearchPublications/BackgroundPapers/PDF/2018-42-e.pdf.

[139] *Building a Strong Middle Class: #Budget2017*, Government of Canada, at 107 (2017) https://www.budget.canada.ca/2017/docs/plan/budget-2017-en.pdf.

[140] *See* Standing Committee on Agriculture and Agri-Food*,* supra note 138.

[141] The Competition Bureau recently investigated power concentration in the retail sector. *See Id.*

[142] Rudolf Messner, Carol Richards, & Hope Johnson, "The 'Prevention Paradox': food waste prevention and the quandary of systemic surplus production", 37 Agric. And Hum. Values 805, 806 (2020).

[143] *Taking Stock* includes call for one action to address this: getting retailers to "conduct daily waste audits to control overstocks and inform future purchasing" and using data analysis to "better forecast demand and reduce surpluses," *supra* note 94 at 12-13.

[144] These include things influenced by "investments, institutional commitments, shared beliefs, power relationships, and political lobbying." Rudolf Messner, Hope Johnson & Carol Richards, "Towards systemic solutions to food waste: Creative destabilisation and escaping food waste lock-in", 92 J of Rural Studies 180 at 181.

[145] Environment and Climate Change Canada*, supra* note 94 at 30.

[146] National Zero Waste Council, supra note 97 at 11 .

Brazil has embraced the distinction between food loss and food waste used by international organizations such as the FAO and UNEP.[147] Food loss, as reported by FAO in the State of Food and Agriculture[148] occurs from post-harvest up to - but not including - the retail level. Food waste, as reported by UNEP in the UNEP Food Waste Index Report,[149] occurs at retail, food service, and consumer level. The critiques of the separation between food loss and food waste – e.g., for obscuring incentives to overproduction or shifting blame to consumers - has not gained traction in Brazilian law and policy circles.

Food waste law and policy in Brazil has remained highly decentralized, with no accepted nationwide standard to measure food waste in the various parts of the food chain and no reliable data on the extension of the food waste problem based on national surveys.[150] Following Brazil's commitment to SDG 12.3, the federal government in 2017 launched the *Intersectoral Strategy for Reducing Food Loss and Waste*.[151] The *Strategy* included recommendations to conduct studies on the dimensions and causes of food waste to inform the establishment of reduction targets for the Brazilian context. These studies were yet to be conducted by writing of this chapter. In most cases the benchmark used to describe the dimension of the food waste problem in Brazil is based on a FAO 2014 estimates that 1/3 of food produced in Latin America is lost or wasted.[152] Despite the need to improve data collection, evidence exists to suggest that the food waste challenge in Brazil is a serious problem and mixes characteristics usually associated with both developing countries (e.g. significant post-harvest losses in the first part of the food chain) and developed countries (significant food waste at the end of the chain).[153]

How is food waste tackled?

Three main features characterize Brazil's approach to reducing food waste: subsidiarity to other policy objectives, decentralization, and low political priority. The country has a long history of isolated legislative initiatives to address some aspects of food waste at the federal level, which has historically been, and remains to this day, subordinate to other policy objectives such as food security and agricultural economic efficiency. Environmental objectives, including climate, have thus far not been significant drivers of food waste policy in Brazil. The country also has a record of uneven subnational (state and municipal) law and policy initiatives to address food waste at the end of the chain, to divert from landfills. There has been no real attempt to create a nationwide system to coordinate the various decentralized initiatives happening at several Ministries at the federal and subnational level, and by non-state actors along the food system value chain.

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[147] Gilmar Paulo Henz & Gustavo Porpino, *Food losses and waste: how Brazil is facing this global challenge?*, 35 *Horticultura Brasileira* 472 (2017).

[148] FAO, *The State of Food and Agriculture 2019 : Moving forward on food los and waste reduction (2019),* https://www.fao.org/3/ca6030en/ca6030en.pdf.

[149] United Nations Environment Programme, *Food Waste Report 2021* (2021), https://www.unep.org/resources/report/unep-food-waste-index-report-2021.

[150] Relatorio Final Perdas e Desperdicios. Grupo de Trabalho para Enfrentamento as Perdas e Desperdício montado no âmbito da CDSA. 27 Setembro 2022, Luis Eduardo Pacifici Rangel, Diretor de Programas, Coordenador do GT.

[151] CAISAN, *Intersectoral Strategy for the Reduction of Food Losses and Waste* (2017). CAISAN is a body created at the Brazil federal government level to help coordinate the policies needed to guarantee the production, the transportation, and promotion of access to healthy and nutritious food to all Brazilians. It is part of the *National System on Food and Nutrition Security (SISAN*), which is responsible for the development and execution of a Brazilwide program to guarantee the right to food.

[152] FAO, *Food Losses and Waste in the Latin America and the Caribbean*, (2014).

[153] EMBRAPA webpage on FLW, at https://www.embrapa.br/en/tema-perdas-e-desperdicio-de-alimentos/perguntas-e-respostas

In Brazil, early initiatives to address post-harvest food waste before the retail level have been linked to efforts to improve agriculture efficiency. Brazil has become an agricultural powerhouse in great part due to a series of intentional technocratic policies intended to modernise the sector and to remove a series of bottlenecks and inefficiencies in agricultural production and transportation.[154] Since the 1970s, Brazilian agronomists and economists have looked at challenges and costs associated with postharvest losses – from farm to retail markets and export hubs – as part of initiatives to promote the agrifood sector in Brazil as an engine of economic development.[155] Policies to address food waste from farm to transportation to retailers continue to have economic efficiency as the primary objective.[156]

In contrast, early initiatives to address food waste at retail and consumer levels in Brazil have been driven primarily by efforts to fight hunger and improve food security. Social movements, academics, and non-governmental organizations fought for the inclusion of social, economic and cultural rights in the Federal Constitution of 1988, which marked the return of democratic rule in Brazil. A 2010 amendment to the 1988 Constitution explicitly included the right to food in article 6 on economic, social and cultural rights. As a result of this constitutional recognition, Brazil has created an institutional framework to coordinate policies at all governmental levels, as well as other initiatives across the public and private sector (civil society organizations, social movements and business actors) so as to guarantee the right to food, with a focus on promoting food security. Laws and policies to address food waste at retail or consumer level have been linked to these efforts on food security, with emphasis on proposals to reform the legislative and policy framework to facilitate diversion of food about to be wasted from retailers and food services to food banks or to charities. Current initiatives on food waste continue to be largely included in larger policies aimed at promoting this right to food objective.[157]

It is worth noting that the linkage between tackling food waste with food security is not exclusive to Brazil, as it also characterizes food waste policy strategies all over Latin America and the Caribbean. In February 2022, the Latin American and Caribbean Parliament (PARLATINO) launched a *Model Law on Prevention and Reduction of Food Loss and Waste*.[158] This Model Law was prepared with the technical assistance from the *Hunger-Free Latin America and the Caribbean Initiative Support Project* and the Development Law Service of FAO.[159] Although the Model Law mentions SDG 12.3 as justification and includes a list of provisions related to environmental objectives (including climate change, waste management and sustainable consumption and production), it is still primarily focused on food security. For example, the only section of the Model Law fully developed with specific legal proposals is the one addressing food donation to human nutrition. When the Community of Latin American and Caribbean States (CELAC), an intergovernmental forum that fosters political integration and socio-

[154] Charles C. Mueller& Bernardo Mueller, *From Backwardness to Global Agricultural Powerhouse: The Transition of Brazilian Agriculture*, In *Agricultural Development in the World Periphery*. (Pinilla , Willebald eds.) 389, 390 (2018).

[155] Thiago Guilherme Péra *et al*., *An Overview of the State-of-the-art of postharvest losses in Brazil, Paper presented in the « Poster Presentation » of the session « Postharvest Loss Scenarios and Measurements » of the First International Congress on Postharvest Loss Prevention held in Rome, Italy, 5 October* 2015; Henz & Porpino, supra note 152.

[156] Relatorio Final, supra note 155, for example, describes the lack of consistent numbers on postharvest losses of grains produced in Brazil.

[157] *Id.*

[158] FAO, *Latin America and Caribbean Parliament adopts Model Law on the prevention and reduction og food loss and waste*, The Development Law Service News (Apr. 12, 2022), https://www.fao.org/legal-services/news/news-detail/en/c/1505021/.

[159] 2014 FAO report on Food Losses and Waste in LAC estimated that the region was responsible for 6% of Global FLW, while at the time 47 million people in the region were suffering from hunger. *See* FAO, *supra* note 157.

economic development in the region, launched the "Food Security, Nutrition and Hunger Eradication 2025" plan (PLANSAN), it included addressing food waste in Pillar 1 (of four main pillars seeking to strengthen all aspects of food security). [160]

Where are measures targeted?

The lack of a concerted federal strategy means that Brazil also lacks policy guidance on the use of the waste hierarchy concept to reduce food waste strategically. There is no focus on prevention of food overproduction or on reducing incentives to overconsumption as a first priority. There is also no guidance to approach managing organic waste as a last resort. Measures directed to avoid food waste that affect the economic efficiency of agrifood sector are at the lower levels of the waste pyramid, as are the policies directed to divert overproduced or about to be wasted food from retails and service industry to food banks, as part of food security initiatives. This approach leaves significant gaps in crucial areas that could play an important role in tackling food waste in higher levels of the hierarchy.

In 2018, the Centre for Strategic Studies and Debates, part of the institutional framework of the Brazilian House of Representatives, released what it deemed to be a detailed assessment of the food waste challenge in Brazil. This assessment included a mapping of the regulatory framework which identified almost thirty bills touching on food waste under discussion in the Brazilian parliament.[161] Almost all of these bills aimed at facilitating food donations.[162] In September 2022, a working group on food waste, created under the National Commission for Agribusiness Sustainability (CDSA) [163] under the Bolsonaro administration, issued a report with recommendations on initiatives to reduce food waste in 5 strategic streams: "research, development, technology and statistics," "assessment of regulatory environment," "integration of public policies," "education and communication," and "international integration." The report concentrated on post-harvest to before retail food waste and had a bent towards economic efficiency of the agrifood sector.

Brazil has lacked any sustained focus on reducing food waste to advance environmental objectives, be it a more environmentally friendly waste management system or reducing methane emissions from organic waste to address climate change. Discussions about waste management tend not to be framed as reducing food waste.[164] Some initiatives to reduce methane emissions from landfills, that could be framed as contributing to reducing food waste, are instead framed as providing climate and economic co-benefits. For example, Brazil finally created a Zero Methane Program in 2022, but its guidelines centre on: developing carbon markets, especially through methane credits; promoting sectorial plans

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[160] Pillar 1 proposes the strengthening of "legal and institutional food security frameworks," facilitation of trade, and avoiding "losses and food waste." Economic Commission for Latin America and the Caribbean (ECLAC), the Food and Agriculture Organization of the United Nations (FAO) & the Latin American Integration Association (ALADI), *Food and nutrition security and the eradication of hunger CELAC 2025*, at 91 (July 2016), https://www.fao.org/americas/priorities/plan-celac/acerca-de-celac/en/.

[161] Food Loss and Waste, 2018 E-book, Brazilian House of Representatives, at 9 [in Portuguese]. Perdas e Desperdicio de Alimentos [recurso eletronico]: estrategias para reducao/ relator Evair Vieira de Melo, Brasilia, Camara dos Deputados, Edicoes Camara, 2008.

[162] Only in 2020 would Congress finally approve Law 14.016, establishing that food donors (retailers and food service organizations) that donate food about to expire to food banks and charities will not be subject to strict liability under criminal and civil codes. Parliament of Brazil, Law 14.016, 23 June 2020. https://planalto.gov.br/ccivil_03/_Ato2019-2022/2020/lei/L14016.htm.

[163] CDSA is a branch of the Ministry of Agriculture, Livestock and Food Supply (MAPA). https://www.gov.br/agricultura/pt-br/assuntos/noticias-2022/grupo-de-trabalho-do-mapa-propoe-estrategias-para-combater-as-perdas-e-desperdicios-de-alimentos/relatoriofinalperdasedesperdicio.pdf

[164] E.g. Cezar Camilo, National Policy on Solid Waste turns 10, with low effectivity (in Portuguese), https://www.poder360.com.br/brasil/politica-nacional-de-residuos-solidos-completa-10-anos-com-pouca-efetividade/.

and agreements; encouraging the creation of green points and corridors for the supply of biomethane-powered vehicles; and supporting the implementation of technologies that allow the use of methane by products as sources of energy and renewable fuel, among others. In this context, the government has also created a "Federal Strategy to Encourage the Sustainable Use of Biogas and Biomethane", which looks at urban and rural waste disposed in landfills or waste from the sugar-energy chain, or waste from pig breeding, poultry farming and other livestock raising as strategic sources of biogas and biomethane.[165]

Despite the commitments to reduce food waste under SDG 12.3 and under other international and regional initiatives, the issue remains at the margins of the country's policy and legislative agendas. The few attempts to promote coordination of regulatory and non-regulatory food waste initiatives at the national and sub-national levels since 2015 have been half-hearted and unsuccessful. Food waste has been primarily approached as a subordinate objective of legal and institutional frameworks created to address the economic efficiency of the agrifood sector and food security, with legal and institutional frameworks to promote environmental objectives still not systematically including food waste. The focus on economic efficiency, and primarily on food donations in the case of food waste from a food security angle, ignores crucial debates like sustainable production and consumption (which requires mechanisms to avoid overproduction of food commodities in the first place), food justice (which requires access to food that is nutritious, and culturally appropriate food, rather than unwanted leftovers), the role of concentrated producing and retailing actors in food waste, the climate impacts of food waste, etc.

4. Comparisons and conclusions

In many ways, the UK is the most advanced of the case jurisdictions in tackling food waste. It has clear definitional guidance that underpins established voluntary efforts to measure and reduce food waste. These voluntary initiatives are guided by the waste hierarchy, which exists on a statutory footing. In Canada, more progress is being made on issues of food waste definition, measuring, and reporting by NGOs and private sector actors, often in collaboration, than by the federal government. In Brazil, there is a long history of isolated efforts to tackle food waste, either to address economic efficiency in the agrifood sector or promote food security, but there is no agreed upon standard to measure the scale of the problem or concerted strategy to reduce food waste strategically and comprehensively. While clear and consistently applied definitions of food waste remain a priority for tackling food waste, none of the case jurisdictions have mandated measurement, although the UK came close to doing so. In contrast, the EU has mandated food waste measurement and reporting with a similar definition approach to that outlined in the FLW protocol.[166] However, it excluded from the definition of food waste food that is not harvested. This has been criticised in view of the potential to 'mask' the true extent of food waste on farms.[167]

While measurement of food waste is important, data transparency around food 'demand' is also crucial to reducing overproduction. This is because, as indicated above, evidence suggests that retailer practices relating to 'on-shelf availability' and promotions mean accurate forecasts are often not

[165] Trench Rossi Watanabe, *Brazil: Government implements zero methane program and federal strategy encouraging the sustainable use of biogas and* biomethane, TrenchRossiWatanabe Legal Alerts (Mar. 29, 2022), https://www.trenchrossi.com/en/legal-alerts/brazil-government-implements-zero-methane-program-and-federal-strategy-encouraging-the-sustainable-use-of-biogas-and-biomethane/.

[166] EU Commission Delegated Decision on a common methodology and minimum quality requirements for the uniform measurement of levels of food waste C(2019) 3211 final 2019.

[167] WWF *Driven to Waste: The Global Impact of Food Loss and Waste on Farms, World Wildlife Fund* (WWF-UK 2021), https://www.worldwildlife.org/publications/driven-to-waste-the-global-impact-of-food-loss-and-waste-on-farms.

implemented. In some respects, sharing data related to consumer demand is the 'the holy grail' of food waste prevention. While the UK recently took data powers as part of its new legislative approach,[168] it has yet to use them. In addition, action to tackle food waste should arguably not be delayed until full definitional and measurement consensus can be reached.

With respect to the food supply chain, the UK and Canada have prioritized food waste reductions downstream, particularly in households, to the detriment of food wasted upstream, especially on farms. Brazil, meanwhile, has perhaps prioritized retail and service sectors more. In the case of the UK, where households are the single biggest source of food waste (this is still debated in Canada), focusing on this part of the food chain may make sense (as the environmental impacts of food waste accrue as food moves along the supply chain). However, reducing farm-level overproduction and waste in the three countries should be a priority.[169] High-income countries have food supplies 200% above nutritional needs.[170] This leads not only to food waste[171] but also undermines long-term food system resilience.[172] Reducing food waste by utilising more of what is produced on farms (such as "ugly foods") could increase supply and meet growing demand, [173] while simultaneously improving sustainability and availability.[174] Farm-level reductions will likely require both demand and supply side measures,[175] as modelling suggests that, in reducing overall levels of food waste, cuts in consumer waste are not always more beneficial than cuts at farm level.[176]

With respect to the waste hierarchy, the three jurisdictions have 'moved up' the hierarchy, rather than prioritizing prevention at source, and have focused on redistributing rather than reducing surplus. In Brazil, tackling food insecurity and agricultural inefficiency have always been dual priorities, whereas in the UK and Canada, the policy connection between surplus redistribution and so-called 'food poverty' is relatively recent. That said, given that redistribution addresses neither the root causes of surplus that lie in the dominant 'productivist paradigm', nor the inequality that lead people to rely on surplus, further support for the practice is controversial.[177] Concerns have been raised that retailers in particular treat redistribution charities as 'dumping grounds' for surplus,[178] and there is no

[168] Agriculture Act 2020, ss 23-8 (U.K.).
[169] Claudio Beretta et al., *Quantifying Food Losses and the Potential for Reduction in Switzerland* 33 Waste Mgmt. 764 (2013); Priefer, Jörissen & Bräutigam, *supra* note 39.
[170] Elisa Facchini et al., *Food Flows in the United Kingdom: The Potential of Surplus Food Redistribution to Reduce Waste* 68 J. of the Air & Waste Mgmt. Ass'n 887 (2018); Papargyropoulou et al., *supra* note 32; Tristram Stuart, *Waste: Uncovering the Global Food Scandal* (Penguin 2009).
[171] Facchini et al., *supra* note 176; Papargyropoulou et al., *supra* note 32; Stuart, *supra* note 176.
[172] *Bojana Bajželj et al., The Role of Reducing Food Waste for Resilient Food Systems* 45 Ecosystem Serv. 101140 (2020).
[173] Lisa K Johnson, *Produce Loss and Waste in Agricultural Production* in *Routledge Handbook of Food Waste* (Christian Reynolds et al. eds), (1st ed., Routledge 2020).
[174] *Id. But see* Martine M Rutten, *What Economic Theory Tells Us about the Impacts of Reducing Food Losses and/or Waste: Implications for Research, Policy and Practice* 2 Agric. & Food Sec.13 (2013).
[175] Caterina Brandmayr et al., *Cutting the Climate Impact of Land Use* (Green Alliance 2019); Quentin D Read et al., *Assessing the Environmental Impacts of Halving Food Loss and Waste along the Food Supply Chain* 712 The Sci. of the Total Env't 136255 (2020).
[176] World Bank Group, *supra* note 44; Harry de Gorter et al., *Analyzing the Economics of Food Loss and Waste Reductions in a Food Supply Chain* 98 Food Policy 101953 (Jan. 2021).
[177] Shannon Millar, Kate Parizeau & Evan DG Fraser, *The Limitations of Using Wasted Food to "Feed Hungry People"* 0 J. of Hunger & Env't Nutrition 1 (2020); Mourad, *supra* note 30; Pat Caplan, *Win-win?: Food Poverty, Food Aid and Food Surplus in the UK Today* (33 Anthropology Today 17 (2017); Effie Papargyropoulou et al., *supra* note 9; Paul Cloke, Jon May & Andrew Williams, *The Geographies of Food Banks in the Meantime* 41 Progress in Hum. Geography 703 (2017).
[178] Effie Papargyropoulou et al., *supra* note 9; Porter, *supra* note 40.

necessary connection between redistribution and prevention.[179] Most academic studies measure quantities of food redistributed, not food waste prevention,[180] with potentially as much as 22%-40% of redistributed surplus ending up in the waste stream. [181] The broader environmental, social, and economic gains of redistribution are also unclear.[182] Noting the broader context of the growth in surplus redistribution, the UN Special Rapporteur in a UK report highlighted the 'tragic consequences' of 'systemic poverty' caused by the 'ideological' and 'deliberate removal' of the social safety net.[183] Relatedly, organisations distributing surplus food are also seen as filling 'gaps in the welfare system', described variously as 'shadow state' institutions and 'neoliberal platoons'.[184] While many have argued that surplus redistribution should be a 'time-limited' intervention, it is over twenty years since prominent UK commentators described the expansion of surplus redistribution as 'unwelcome',[185] even 'medieval'.[186] Concerns have thus been raised about the further 'institutionalisation' of surplus redistribution.[187] For similar reasons, the desirability of legislation in France requiring certain food industry actors to enter into agreements with charitable food redistribution organisations to donate surplus food[188] has been questioned.[189]

However, the potential drawbacks of the linkage between surplus and inequality have not been problematized as much in Brazil. One notable difference that results from this is the example of the legal protection for retail and other donations to food banks in Brazil (and Canada).[190] Some have urged the UK to adopt so-called 'Good Samaritan Laws' to respond to concerns that liability for food

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[179] Karin Schanes & Sigrid Stagl, *Food Waste Fighters: What Motivates People to Engage in Food Sharing?* 211 J. of Cleaner Prod. 1491 (2019)*;* Mariam Nikravech et al*., Limiting Food Waste via Grassroots Initiatives as a Potential for Climate Change Mitigation: A Systematic Review* 15 Env't Rsch. Letters 123008 (2020); Piergiuseppe Morone et al., *Does Food Sharing Lead to Food Waste Reduction? An Experimental Analysis to Assess Challenges and Opportunities of a New Consumption Model* 185 J. of Cleaner Prod. 749 (2018).

[180] Niina Sundin et al., *Surplus Food Donation: Effectiveness, Carbon Footprint, and Rebound Effect* 181 Res., Conservation and Recycling 106271 (2022); Karki, Bennett and Mishra, *supra* note 82; Amelie A Hecht & Roni A Neff, *Food Rescue Intervention Evaluations: A Systematic Review* 11 Sustainability 6718 (2019); Nikravech et al., *supra* note 185; Daniel N Warshawsky, *The Devolution of Urban Food Waste Governance: Case Study of Food Rescue in Los Angeles* 49 Cities 26 (2015); Felicitas Schneider, *The Evolution of Food Donation with Respect to Waste Prevention* 33 Waste Mgmt. 755 (2013).

[181] Sundin et al., *supra* note 186; Catherine Alexander & Chris Smaje, *Surplus Retail Food Redistribution: An Analysis of a Third Sector Model* 52 Res., Conservation and Recycling 1290 (2008).

[182] Lougheed & Spring, *supra* note 15; Nikravech et al., *supra* note 185; Sundin et al., *supra* note 186.

[183] UN Human Rights Council, *Report of the Special Rapporteur on Extreme Poverty and Human Rights on His Visit to the United Kingdom of Great Britain and Northern Ireland, Philip Alston* (2019), A/HRC/41/39/Add1 , https://undocs.org/pdf?symbol=en/A/HRC/41/39/Add.1; *Poverty in the UK Is "systematic" and "Tragic", Says UN Special Rapporteur*, *BBC News* (21 May 2019) https://www.bbc.com/news/uk-48354692.

[184] Jane Midgley, *Surplus Food Redistribution*' in *Routledge Handbook of Food Waste* (Christian Reynolds et al. eds.), (1st ed., Routledge 2020).

[185] Corinna Hawkes & Jacqui Webster, *Too Much and Too Little? Debates on Surplus Food* (Sustain 2000) vi.

[186] John Vidal and Environment editor, *Scandal of the Food Britain Throws Away*, The Guardian (April 4, 2000), https://www.theguardian.com/news/2000/apr/04/food.foodanddrink3.

[187] Midgley, *supra* note 190 at 356; Papargyropoulou et al., *supra* note 9 at 181.

[188] Loi n° 2016-138 relative à la lutte contre le gaspillage alimentaire (2016) (Fr.) (Law relating to the fight against food waste); *Lutte Contre Le Gaspillage Alimentaire : Les Lois Françaises* (*Ministère de l'Agriculture et de la Souveraineté alimentaire*) (Sept. 28, 2022) https://agriculture.gouv.fr/lutte-contre-le-gaspillage-alimentaire-les-lois-francaises.

[189] WWF-WRAP, *Halving Food Loss and Waste in the EU by 2030: The Major Steps Needed to Accelerate Progress,* WWF-WRAP(2020); Marie Mourad & Steven Finn, *Opinion | France's Ban on Food Waste Three Years Later Food Tank* (June 19, 2019),https://foodtank.com/news/2019/06/opinion-frances-ban-on-food-waste-three-years-later/.

[190] For Canada, see *supra* note 127. For Brazil, see *supra* note 167.

donation is too expansive,[191] although the necessity and desirability of this has been questioned.[192] In particular, corporate liability protections may leave the poorest citizens open to harm while ensuring that surplus redistribution does not disrupt the profit motives and excess/overproduction that dominate supply chains.[193] Italy's Good Samaritan law[194] is seen by some as an example of best practice by protecting non-profit food redistribution organisations only.[195] However, a question remains whether these laws are 'a solution in search of a problem'.[196]

In terms of an overarching governing approach, the UK is also seemingly the more advanced of the case jurisdictions. Indeed, the UK is widely regarded as a world-leader on food waste prevention, with the voluntary approach increasingly followed in other jurisdictions.[197] WRAP reports that the current reduction trajectory puts the UK on track to reach SDG 12.3.[198] However, changing methodologies and baselines have been said by the NGO Feedback to have cumulatively watered-down ambition and removed substantial portions of food waste from scope.[199] In addition, limitations of voluntary approaches that will be familiar to environmental lawyers have been noted. These include a lack of ambition and urgency; concerns as to free-riding and a lack of transparency; and broader questions of the effectiveness and pace of change compared to harder regulatory approaches.[200] By analogy to the likening of the Paris Climate Agreement to a 'Crème Brûlée',[201] Courtauld might be described as a 'Crème Caramel in a Black Box': soft on the outside (with no binding reporting obligations), soft on the inside (with no binding reductions targets), and difficult to assess and research (in view of Courtauld's aggregated food waste reporting and 'Working Groups' that operate behind closed doors). The only

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[191] HEJ Bos-Brouwers et al., *Food Redistribution in the EU – Mapping and Analysis of Existing Regulatory and Policy Measures Impacting Food Redistribution from EU Member States* (EU 2020), https://research.wur.nl/en/publications/food-redistribution-in-the-eu-mapping-and-analysis-of-existing-re; Joseph S Beckmann et al., *UK Recommendations: Food Donation Law and Policy*,The Global Food Donation Policy Atlas (2021) ,https://www.foodbanking.org/wp-content/uploads/2021/04/UK-Recs-v2.pdf.

[192] Bradshaw and Wentworth, supra note 64.

[193] Sarah Munger, *Bill Emerson's Makeover: Reforming the Bill Emerson Good Samaritan Food Donation Act* 19 Vt. J. of Env't Law 64 (2018); Joshua D Lohnes, *Regulating Surplus: Charity and the Legal Geographies of Food Waste Enclosure* 38 Agric. and Hum. Values 351 (2021).

[194] Legge del Buon Samaritano 155/2003 (Law of the Good Samaritan) (It.).

[195] Bos-Brouwers et al., *supra* note 194; EU Platform on Food Losses and Food Waste, *Redistribution of Surplus Food: Examples of Practices in the Member States* (2019),https://ec.europa.eu/food/system/files/2019-06/fw_eu-actions_food-donation_ms-practices-food-redis.pdf.

[196] David L Morenoff, *Lost Food and Liability: The Good Samaritan Food Donation Law Story* 57 Food and Drug Law J. 107 (2002); Carmen Shaeffer Kalashian, *Out of Sight, Out of Mind: Finding a Solution to Food Waste in America* 23 San Joaquin Agric. Law Rev.103 (2013); House of Lords EU Committee, *Counting the Cost of Food Waste: EU Food Waste Prevention - 10th Report of Session 2013–14* (The Stationery Office 2014).

[197] *See e.g.*, Jonathan Bloom, *American Wasteland: How America Throws Away Nearly Half of Its Food* (Da Capo Lifelong Books 2011), ch 11, *Great Britain! A kingdom united in hating waste*; Wunder et al., supra note 18; Bos-Brouwers et al., supra note 197; WRAP, *The Courtauld Commitment Annual Report - Shaping a Sustainable Recover,y* WRAP (2021), https://wrap.org.uk/sites/default/files/2021-07/WRAP-Courtauld-Commitment-Annual-Report-2021.pdf.

[198] *WRAP, UK Progress against Courtauld 2025 Targets and UN Sustainable Development Goal 12.3 (Final Report),* WRAP (2020).

[199] Feedback Global, *Waste Prevention Programme - Consultation Response* (on File with the Author).

[200] Pringle, *supra* note 58; Bradshaw, *supra* note 7; D McCarthy & P Morling, *Using Regulation as a Last Resort: Assessing the Performance of Voluntary Approaches* ,Royal Society for the Protection of Birds (2015),http://ww2.rspb.org.uk/Images/usingregulation_tcm9-408677.pdf; Feedback, *No Time To Waste - Why the EU Needs to Adopt Ambitious Legally Binding Food Waste Reduction Targets*, Feedback EU (2022)https://feedbackglobal.org/wp-content/uploads/2022/09/Feedback-EU-2022-No-Time-To-Waste-report-1.pdf; Feedback Global, *supra* note 205.

[201] Jonathan Pickering et al., *Global Climate Governance Between Hard and Soft Law: Can the Paris Agreement's "Crème Brûlée" Approach Enhance Ecological Reflexivity?* 31 J. of Env't Law 1 (2019).

identified systematic evaluation of voluntary approaches concluded that 'rarely if ever' are voluntary approaches an effective substitute for regulatory or fiscal measures.[202] However, the UK approach arguably involves 'outsourcing' government responsibility for food waste to WRAP.[203]

WRAP is an interesting although arguably under-researched governance institution and model. On the one hand, WRAP is seen as housing significant food waste expertise,[204] and is regarded as a 'trusted intermediary' that has supported the 'process of coalition building'.[205] On the other, most of the evidence base evaluating the voluntary approach (and declaring it effective) comes from WRAP,[206] the body tasked and funded by government to deliver on government policy. Some describe WRAP as independent from government, [207] but others question this.[208] WRAP does not exist on a statutory footing, and in view of its funding settlement and raison d'être, it arguably has some constraints on its ability to engage in robust critique of government. There is thus a risk that the voluntary approach—administered partially behind closed doors and primarily evaluated by WRAP—becomes somewhat self-perpetuating. Professor Tim Lang described food waste in Britain as a 'policy failure on an institutionally grand scale'.[209] As such, other jurisdictions might consider fast-forwarding to harder measures that match the now-urgent scale of ambition required under SDG 12.3 and the Paris Agreement, rather than depending so heavily on lower levels of government, NGOs and the private sector, as in Canada.

Relatedly, a central question in tackling food waste relates to the distribution of power in food supply chains, particularly the role of retailers. Measures that protect retailers (like Good Samaritan laws), or those which rely on, harness, and arguably entrench their influence (like the UK's voluntary approach) can be contrasted with the importance of limiting retail power at the apex of the hourglass supply chain. As noted by Devin and Richards, 'where waste is a symptom of market power . . . market power needs to be addressed."[210] But this remains challenging, for several reasons. One is that deep vertical integration of food systems means that these corporations have significant lobbying strength to resist power-limiting regulation.[211] Many civil society actors believe governments to be closely embedded with private sector interests (as is the case with many other environmental protection endeavours), arguing that more participatory food governance structures are necessary to ensure improved accountability.[212] For example, calls are increasingly made to radically reimagine the food system though more diverse agro-ecological and localized systems,[213] such as 'short food supply

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[202] McCarthy & Morling, supra note 206 at 13.
[203] Bradshaw, supra note 7.
[204] ibid.
[205] Swaffield, Evans, Welch *supra* note 43 at 247. *See also* Pringle, supra note 58; Bradshaw, supra note 7.
[206] Or projects on which WRAP is a partner: Piras et al., supra note 40.
[207] *Id.* at 64.
[208] Pringle, supra note 58.
[209] Tim Lang, *Feeding Britain: Our Food Problems and How to Fix Them* (Pelican 2020).
[210] Devin & Richards , supra note 40 at 208.
[211] Jennifer Clapp, *Mega-Mergers on the Menu: Corporate Concentration and the Politics of Sustainability in the Global Food System* 18 Glob. Env't Pol. 12 (2018).
[212] See Alison Blay-Palmer, Roberta Sonnino, and Julien Custot. A food politics of the possible? Growing sustainable food systems through networks of knowledge. Agriculture and Human Values 33 (2016); Levkoe, C. Z., Andrée, P., Ballamingie, P., Tasala, K., Wilson, A., & Korzun, M.(2023). Civil society engagement in food systems governance in Canada: Experiences, gaps,
and possibilities. Journal of Agriculture, Food Systems, and Community Development, 12(2), 267–286. https://doi.org/10.5304/jafscd.2023.122.005;
[213] Clapp, supra note 217; Blay-Palmer, supra note 218. An example of a circular food economy is the project of the City of Guelph in Ontario, Canada, which the federal government helps to finance. *50x50x50 by 2025: Creating Canada's first circular food economy*, City of Guelph, https://guelph.ca/wp-content/uploads/SmartCities_Booklet.pdf.

chains' and producer and consumer co-operatives such as Community Supported Agriculture (CSA).[214] These have the potential to be less wasteful than supermarket-led systems by circumventing intermediaries and bypassing private cosmetic standards,[215] while also increasing the profit and bargaining power of growers.[216] But shifting towards them remains challenging in view of prevailing economic interests in the status quo.

Indeed, the source of retail power—market consolidation and concentration (words that probably best sum up changes in the food the system over the last century)[217]—are at least in part the outcome of government policies deliberately implemented to drive down food prices and increase agricultural productivity. This has resulted in what Benton and Bailey refer to as 'paradox of productivity'.[218] Increased agricultural productivity has not only driven waste, but through more intensive farming, decreasing crop diversity, and increasing levels of environmental degradation, built fragility into the food system and exerted downward pressure on the livelihood of producers.[219] Many therefore call for measures to 'internalise' these various 'externalities' (again, broadly familiar to environmental economists and policymakers), so that food prices reflect the broader social, environmental, and economic costs food of production.[220] There are of course challenges involved in using economic instruments.[221] However, in the context of a policy problem like food waste they have several advantages, given the challenges of using direct regulation against multiple sectors, levels, and motivations.[222] At the same time, the social welfare implications of increasing the price of food could be addressed through e.g. social security provision and action on wages (in turn reducing the reliance on surplus for those living in poverty).[223] Such measures could include carbon taxes,[224] emission trading systems for livestock products, [225] or perhaps more radically, Personal Carbon Trading (PCT).[226] However, mechanisms that increase the cost of food are daunting to implement[227] and are somewhat of a 'political third rail'.

In view of this, targeting the cost of waste remains an important (potentially alternative) strategy. Examples include variable charging / 'pay-as-you-throw' (PAYT) schemes for food waste (such as in

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[214] Francesca Galli & Gianluca Brunori, *Short Food Supply Chains as Drivers of Sustainable Development,* Foodlinks: Brussels (2013); Priefer, Jörissen & Bräutigam, supra note 39.; Gustavsson et al., supra note 26.

[215] Gustavsson et al., *supra* note 26 at 11; Christine Göbel et al., *Cutting Food Waste through Cooperation along the Food Supply Chain* 7 Sustainability 1429 (2015); Priefer, Jörissen & Bräutigam, *supra* note 39.; Devin & Richards, *supra* note 40; Gille, *supra* note 37.

[216] Priefer, Jörissen & Bräutigam, *supra* note 39.; Julie Brown, *How Short Supply Chains Benefit Everyone,* Sustain (Apr. 26, 2021),https://www.sustainweb.org/blogs/apr21-big-benefit-short-supply-chains/.

[217] Margot Pollans, *Eaters: Powerless by Design* 120 Mich. Law Rev. 643 (2022).

[218] Benton & Bailey, supra note 11.

[219] Harry de Gorter et al., *Analyzing the Economics of Food Loss and Waste Reductions in a Food Supply Chain* Food Policy 101953 (2020); FAO, supra note 26; Peter Alexander& Dominic Moran, *Rethinking Food Waste for a Healthier Planet* 1 The Lancet Planetary Health e170 (2017).

[220] *See e.g.*, World Bank Group, supra note 44; Benton & Bailey, supra note 11; Garske et al., supra note 16.

[221] Frank Ackerman & Lisa Heinzerling, *Priceless: On Knowing the Price of Everything and the Value of Nothing* (T 2004); Michael Sandel, *What Money Can't Buy: The Moral Limits of Markets* (2012).

[222] Antonia Weishaupt et al., *Land Use, Livestock, Quantity Governance, and Economic Instruments—Sustainability Beyond Big Livestock Herds and Fossil Fuels* 12 Sustainability 2053 (2020). Garske et al., supra note 16, and the references cited therein.

[223] *Cameron Tait, Hungry for Change - The Final Report of the Fabian Commission on Food and Poverty* Fabian Policy Report (2015).

[224] World Bank Group, supra note 44.

[225] Garske et al., supra note 16; Weishaupt et al., supra note 228.

[226] Francesco Fuso Nerini *et al., Personal Carbon Allowances Revisited* Nature Sustainability 1 (2021).

[227] World Bank Group, supra note 44 at 27.

South Korea),[228] financial penalties for destroying food (as in France),[229] or fines for excessive HaFS waste (as in China). [230] Others suggest mechanisms that seek to 'distribute' or 'share' the costs of food waste across the food supply chain, such as extended producer responsibility regimes,[231] or a food waste 'levy' on retailers.[232] Combined with bans on landfilling organic waste, such measures could shift the responsibility for dealing with surplus food onto larger actors, in turn targeting the economic logic and incentives for excess production. Arguably, this is preferable to further investments in disposal and bioenergy technologies. This may mean accepting some sunk costs of past approaches, such as the 'AD Beast' which many countries must now continue to feed.[233] However, the environmental and economic savings are arguably a strong selling point for governments committed to longer-term change.[234]

In this regard, *legal* frameworks committing governments to long-term action seem (perennially) lacking. All 3 case study countries are signatories to the Paris Agreement, but like most countries, none have addressed food waste in their NDCs.[235] Similarly, all have committed to SDG 12.3, but none have adopted a binding food reduction target, in contrast with the likely adoption of a mandatory food waste prevention target at EU level.[236] Indeed, the lack of binding legal obligations and targets on a range of environmental issues as a result of the UK's departure from the EU[237] could cause it to backslide on food waste and lose its reputation as a world-leader. A recent back and forth about whether to pass legislation to mandate food waste reporting may be the starting point of just such a downward trend.[238]

As more countries, intergovernmental agencies, and international organizations recognize the multiple benefits of reducing food waste in achieving climate targets, other Sustainable Development

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[228] Priefer, Jörissen and Bräutigam, supra note 39.

[229] Loi n° 2016-138 relative à la lutte contre le gaspillage alimentaire (Law relating to the fight against food waste).

[230] Y Feng, C Marek and J Tosun, *Fighting Food Waste by Law: Making Sense of the Chinese Approach* 45 J. of Consumer Pol'y 457 (2022).

[231] Bradshaw, supra note 17; Bradshaw, supra note 17.

[232] Feedback, supra note 205 at 24–25 and 29.

[233] Bradshaw, supra note 17.

[234] Feedback, B*ad Energy: Defining the True Role of Biogas in a Net Zero Future*',Feedback (2020) https://feedbackglobal.org/wp-content/uploads/2020/09/Feedback-2020-Bad-Energy-report.pdf; Messner, Richards & Johnson, supra note 147.

[235] Craig Hanson, *Countries' Climate Plans (NDCs) Are Missing a Big Opportunity: Reducing Food Loss and Waste*, World Resources Institute (Jul. 3, 2019), https://www.wri.org/insights/countries-climate-plans-ndcs-are-missing-big-opportunity-reducing-food-loss-and-waste [ND: WRI identifies just a few countries that included food waste and 12.3 target in their NDC, Brazil not being one of them.] *Canada's Nationally Determined Contribution* (2021), https://unfccc.int/sites/default/files/NDC/2022-06/Canada%27s%20Enhanced%20NDC%20Submission1_FINAL%20EN.pdf; Secretary of State for Business, Energy, and Industrial Strategy, *United Kingdom of Great Britain and Northern Ireland's Nationally Determined Contribution*(Crown Copyright 2022); Yvette Cabrera & Pete Pearson, *Food Waste Needed in Nationally Determined Contributions*, *WWF (Nov. 15, 2022*), https://www.worldwildlife.org/blogs/sustainability-works/posts/food-waste-needed-in-nationally-determined-contributions. Although the UK does link in its NDC to secondary documents that mention food waste. WRAP, *Food Loss and Waste - From Commitments to Action: A Watching Brief on Nationally Determined Contributions*, WRAP (2022).

[236] EU Commission Proposal for a Directive of the European Parliament and of the Council amending Directive 2008/98/EC on waste COM(2023) 420 final 2021 3–8.

[237] *See e.g.,* Elizabeth Fisher, E*xecutive Environmental Law* (83 The Modern Law Rev. 163 2020); Maria Lee, *Accountability for Environmental Standards after Brexit* 19 Envi't Law Rev. 89 (2017).

[238] Carrie Bradshaw, 'Written Evidence Submitted to the House of Common Public Accounts Committee Inquiry on The Government's Resources and Waste Reforms for England (GRWR0024)' <https://committees.parliament.uk/writtenevidence/123797/pdf/> accessed 29 November 2023.

Goals, as well as the right to food, it is hoped that the lessons being learned in the UK, Canada, and Brazil can help to guide effective and rapid change in this area.