sustainability

MDPI

Review

Corporate Reporting on Food Waste by UK Seafood Companies: Literature Review and an Assessment of Current Practices

Mohammad Al-Tamimi, John De-Clerk Azure * and Ramakrishnan Ramanathan

Essex Business School, University of Essex, Essex CO4 3SQ, UK
* Correspondence: john.azure@essex.ac.uk

Abstract: Over 10% of the world's population is undernourished, yet 1/3 of all food produced each year is lost or wasted. Such a level of inefficiency in the global food system has a significant economic, social, and environmental impact which has elicited calls for urgent global action. This paper responds to this call by developing an interdisciplinary framework focusing on legal, regulatory, accounting, and reporting frameworks to improve the prevention or reduction of food loss and waste (FLW). Mobilising a literature review, this paper advances a three-pronged suggestion for tackling FLW in UK seafood companies: the development of technological solutions in the form of sensors; the enactment of a comprehensive legal and regulatory reporting template for seafood companies; and finally, the development of accounting standards that mandate reporting beyond the current Food and Waste Accounting and Reporting Standard by the Water Resources Institute (WRI), which is modelled on voluntary compliance.

Keywords: corporate reporting; interdisciplinary approach; food waste; UK seafood companies

Citation: Al-Tamimi, M.; Azure, J.D.-C.; Ramanathan, R. Corporate Reporting on Food Waste by UK Seafood Companies: Literature Review and an Assessment of Current Practices. *Sustainability* **2023**, *15*, 1213. https://doi.org/10.3390/su15021213

Academic Editor: Irene Voukkali

Received: 30 November 2022
Revised: 28 December 2022
Accepted: 3 January 2023
Published: 9 January 2023

1. Introduction

While over 828 million people are underfed (over 10% of the world's population), one-third of all food produced is lost or squandered, worth around $1 trillion [1,2]. Food waste occurs during transportation from the food's point of production to its destination. In other words, some food ends up in waste bins of consumers and retailers or spoils due to poor transportation and harvesting practices. Food waste refers to all edible and non-edible materials discarded or diverted from the normal supply chain [3,4]. Such food is either unfit for consumption or is originally fit but intentionally discarded at the production, trade, or consumption phases, all of which are encompassed by food loss and waste (hereafter, FLW).

FLW is associated with ethical, financial, social, and environmental costs. Environmentally, for instance, it contributes 8% of greenhouse gas emissions (GHGE) [5]. To ensure and improve worldwide food security, reducing food waste has risen to the top of the political agenda worldwide [6,7]. The United Nations' Sustainable Development Goals (SDGs), approved in 2015, represent a landmark initiative to address some of the world's most critical and persistent issues. As part of the 2030 Agenda, 17 SDGs have been backed by 169 objectives and 232 indicators [8]. The issuance of SDG12.3, which targets the halving of food waste between 2007 and 2030, has accelerated efforts to reduce, prevent, and manage food waste. Despite such exertions and accomplishments, food waste is still a global issue [9]. Therefore, FLW needs to be further explored by governments and researchers to provide relevant parties with high-quality data to support decisions on how and where efforts and money (i.e., investment) should be applied. For example, research can improve methods of addressing FLW and its related difficulties, fostering innovation and new reduction ideas [10].

Corporate social and environmental disclosure is a reasonable societal commitment [11]. Reporting on food waste is necessary to track the progress toward reducing its impact on our lives. Despite the broad agreement by stakeholders concerning the adverse consequences and implications of FLW, there are challenges to firms' accounting and reporting

on FLW. To effectively reduce FLW in the supply chain, businesses need accurate data on how much waste is produced and where it occurs. FLW accounting and reporting is a central element for policy design and interventions, given that what gets measured and reported on gets addressed.

Previous studies on food waste have focussed on the issue at the consumer level [12], organisational level, and supply chain level [13,14]. To date, no studies have focussed on reporting practices that facilitate more food waste reduction by wider aspects. This paper is the first of its kind to fill this important knowledge gap. The paper aims to discuss an interdisciplinary approach to tackling food waste, including the role of corporate reporting. In particular, we argue that the current FLW reporting status needs reform and profound consideration, especially regarding seafood waste. An interdisciplinary approach is essential because FLW reporting is complex and involves multiple stakeholders [6].

A sustainable food system is an evolving process in which attaining food and nutritional security should also support future generations' food and nutrition stability [15,16]. Access to food safety, quality, and environmental and social sustainability are all aspects of corporate social responsibility (CSR) [17]. This conceptual paper aims to identify and assess the relevant literature on food waste in the UK with more of a focus on seafood. This includes areas such as corporate reporting legislation and the use of technology.

This paper is structured as follows. After this introduction, a review of the literature on food waste in general and seafood waste in specific is presented. The consequences of food waste are discussed before reviewing national and international reduction efforts. Afterwards, reporting frameworks on accounting for food waste are discussed. Finally, a summary and recommendations are provided.

2. Literature Review

Over the last few decades, there has been a surge in awareness about the issue of food waste. Through extensive and regular statistics, several studies have demonstrated the magnitude of this problem [10]. As a result, many national and international organisations have prioritised the addressing of problems of food waste (by reduction, prevention, and management). Their efforts have frequently linked FLW to larger concerns about social justice, the environment, climate change, and managing scarce resources.

FLW studies have been carried out in developed countries such as the UK [18], the USA [19], Taiwan [20], and Italy [21]. Likewise, several studies have addressed food waste in developing countries such as South Africa [22], Brazil [23], Turkey [24], Malaysia [25], India, [26], Mexico [27], China [28], and Romania [29]. The literature shows relatively high differences between the countries regarding sources and typical food waste destinations. The techniques for handling FLW include destinations such as animal feeding, composting (or organic fertiliser), anaerobic digestion, incineration, and landfills (including illegal open dumping that is common in developing countries) [30,31].

Previous FLW studies have relied on different theories. One line of research used the theory of planned behaviour to examine household food waste behaviour change interventions e.g., [29,32–34]. On the other hand, Shove [35] provided a detailed critical appraisal of the social practice that broadens the view on food waste creation beyond individual psychological elements, including attitudes, behaviour, and choice. Regarding methodologies used, most previous studies have relied on quantitative methods to document FLW magnitude and solutions. On the other hand, several studies have relied on qualitative approaches, such as the case study approach (single or multiple), including Liljestrand [36], who applied semi-structured interviews and site visits to study logistics solutions for the reduction of FLW. Similarly, interviews were undertaken by Mena, Adenso-Diaz [37] in the UK and Spain, who found that tubers, vegetables, and fruit have the highest FLW levels.

2.1. Consequences of Food Waste

Previous studies have provided convincing evidence that FLW negatively affects the environment [38] and the economy, [39] while also posing moral dilemmas [40]. The

environmental impact pertains to the produced emissions and the economic impact pertains to the costs of uneaten food. On the other hand, the moral or ethical issue is caused by the presence of people going hungry elsewhere.

Various governmental, private, and international programmes and researches have underlined the significance of FLW issues in recent years, including nutrition security, environmental effects, resource exploitation, and sustainable development [41]. If food is lost during production, then the land, water, energy, and inputs employed in its creation are wasted, and so is the resulting GHGE [1]. An estimated 40.7 million tonnes of food are wasted annually worldwide, which amounts to almost 26% of total food reserves, an amount of food for which there has not been found a use [42]. Cultivated but never consumed food uses an estimated 250 km^3 of fresh water annually and needs approximately 1.4 billion acres of land [43]. Several studies have focused on the wider impacts of seafood as a major type of food. For example, Liu, Lundqvist [28] have studied FLW in regards to its implications for a country's water and land resources.

Reducing food waste shrinks its significant effect on the environment, saves money [44], and makes companies look more morally sound and equitable [40]. Companies vary in their efforts and FLW reduction achievements. Per se, reduction appears to be an achievable and collaborative goal. However, there are many difficulties in corporate reporting, such as comparability, which mandatory standards of quantification and reporting can alleviate.

Those consequences may be avoided by reducing food waste since less food must be manufactured based on the agreed FWL hierarchies.

2.2. Food Waste in the UK: Facts and Reduction Efforts

Countries differ in the waste they generate. Waste generated in the UK is close to the global average but has a lower rate of food waste per capita than many developed and underdeveloped states [8], as shown in Figure 1 below.

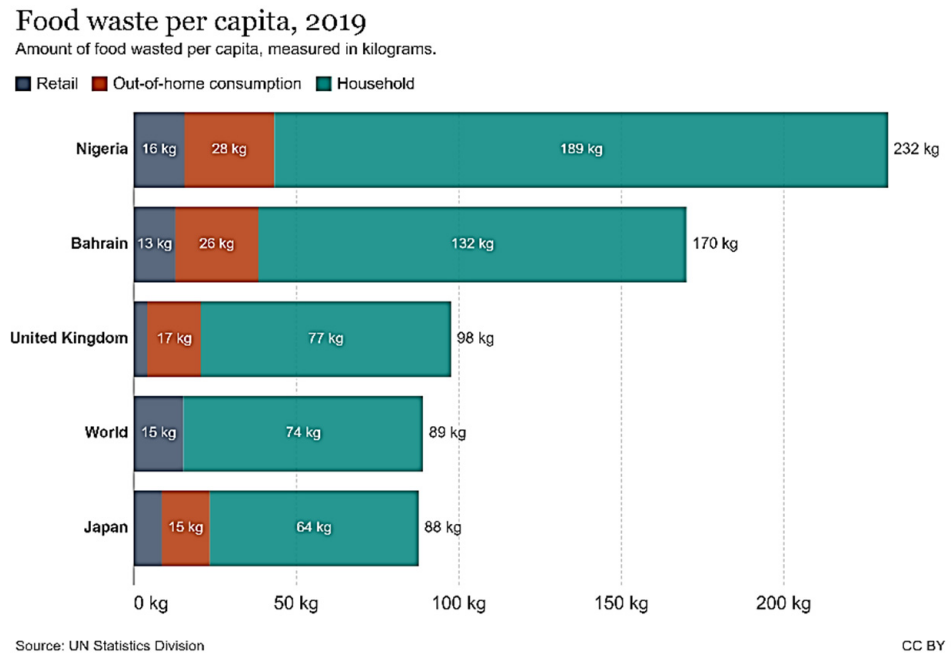

Figure 1. Food wasted per capita. Source: [45].

The figure shows that food wasted in kilograms per capita differs significantly among countries (developing and developed). Figure 2 below presents the total annual household food waste produced in selected countries in 2021.

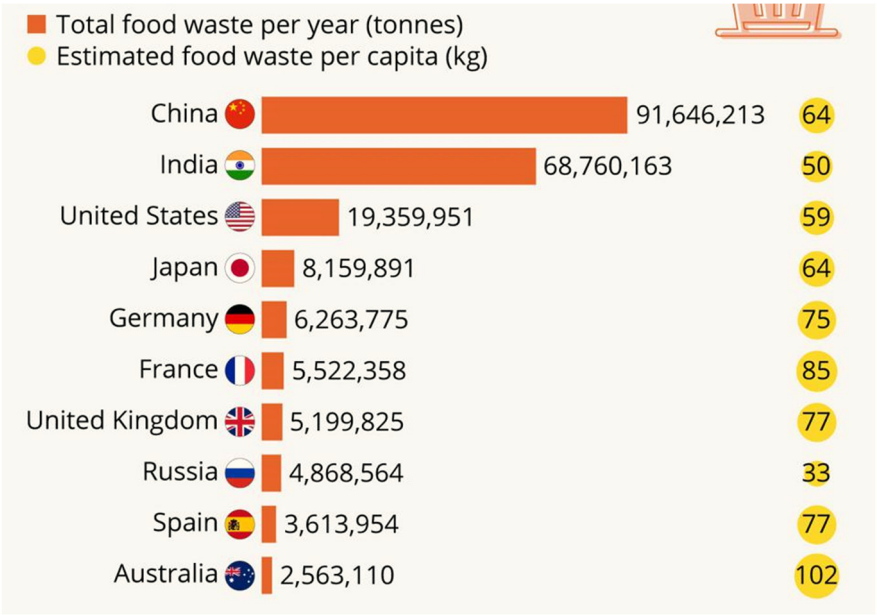

Figure 2. Total and per capita food waste in selected countries. Source: Statista, 2022.

The reasons behind food waste vary from cultural, political, economic, and geographical factors, as have been compiled in some literature review papers e.g., [46]. The data about the causes of food waste and the impediments to its reduction remain complex and dispersed [47]. Consequently, some studies have suggested complex techniques to address food waste, such as the food-waste management decision tree [48]. Discussing these techniques is beyond the current study objectives.

Governmental interventions have centred on preventing waste from entering landfills using legislation, taxes, and public awareness [37]. Some of the largest grocery chains in the UK have adopted corporate policies that stress the need to reduce food waste [49]. Despite following SDG 12.3, there is no mandatory food waste reporting yet in the UK, but consultations (by seeking views and evidence on the type of business scope, material scope, reporting processes and compliance and enforcement [46,50]) are ongoing to view opinions on reporting by large UK food firms [50]. The UK government has been seeking to guarantee an adequate decrease in food waste to sustain development and reap the advantages, especially because, owing to a lack of awareness, motivation, and confidence in their abilities to do so, major food enterprises do not track and report food waste [50]. A food business includes firms working in packing, manufacturing, and wholesaling, as well as retailers, caterers, and food services (e.g., restaurants).

The UK's suggested reporting model uses reliable templates such as the Waste and Resources Action Programme (WRAP). Larger firms must report the data to the regulator (the Environment Agency). In addition, WRAP works with United Against Food Waste Netherlands to coordinate efforts on food waste from retailers, collaborate on FLW technologies, and require supplier reporting [51]. For instance, 27 of Tesco's own-brand suppliers (around 50% of its fresh food sales) have released statistics on their food waste for the second year in a row. These initiatives can be used as case studies to encourage other retailers toward more transparency.

Due to inefficient food transportation and consumption, high-income nations have a larger per capita food waste impact on the environment than low-income countries [43]. However, following a state-wide programme organised by the government, retailers, and WRAP, the UK reduced food waste in homes by an impressive 21 per cent between 2007 and 2012 [52]. For over a decade, WRAP has tracked and published data on FLW in the UK, and household food and drink waste figures were first released by WRAP in 2008 (WRAP, 2011). It is argued that the UK is the only nation on pace to meet the UN's 2030 goals, with a 27% decrease in FLW between 2007 to 2018 [53]. The UK government aims

to improve future generations' environmental conditions and reduce food supply chain emissions and waste ('A Green Future: Our 25-Year Plan to Improve the Environment' sets out what the government will do to improve the environment within a generation. This report is available on: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf, accessed on 25 November 2022). In particular, the goal is to reduce the GHGE intensity of food and drink eaten in the UK by one-fifth by 2025 and reduce per capita UK food waste. By promoting better and more environmentally friendly eating and drinking habits, the UK will be well on its way to achieving SDG 12.3.

The Courtauld Commitment is a series of commitments started in 2005, and in co-operation with WRAP and large firms, that aim to explore solutions throughout the full supply chain to minimise domestic packaging and food waste. Since its first version, it has proved to be a durable and effective agent of change and has decreased the carbon footprint and broader environmental effect of the UK's food and beverage industry. Courtauld Commitment 2025 is a bold voluntary agreement engaging organisations throughout the food supply chain. The pledge looks across supply chains to discover efficiencies such as educating customers. The realised savings will be evaluated using standard metrics aligned with international best practices.

The amount of food waste that can be saved is high; nearly 75% of the 6.6 million tonnes of household food waste discarded in the UK each year is food that could have been consumed. Therefore, FLW reduction plans and efforts need to be reviewed continuously to ensure that country-level targets that participate toward the global targets can be met.

2.3. Seafood Waste: Nature and Uniqueness

Seafood is an important type of food [54] that makes up a significant percentage of food consumed by many nations. Nearly three billion people worldwide depend on wild-caught and farmed seafood as a principal source of animal protein (20% in 2013), making it a vital dietary source [9]. Approximately twice as much seafood is consumed worldwide as in the last 50 years with the growth of the world's population [55]. Seafood is a commodity group that includes "freshwater fish, demersal fish, pelagic fish, other marine fish, crustaceans, other mollusk, cephalopods, other aquatic products, aquatic mammal meat, other aquatic animals, aquatic plants" p. 10 [2].

Seafood has already been subject to many problems, such as overfishing, pollution, and the global warming catastrophe that seriously endangers fish stocks. Because fish consumption is expected to double by 2050, international authorities (e.g., FAO) are becoming more concerned about seafood waste, arguing that everyone around the globe has to take action. Researchers need to know where most food waste happens in the first place. The nations with the largest catch fisheries generate the most waste, including the USA, Canada, Norway, Spain, Korea, China, and India [56]; thus, many studies have focused on certain locations when addressing seafood waste [5,15,57–61]. Therefore, the significance of the UK context requires more research.

Thirty-five percent of fish and seafood is wasted annually [5]. A significant difficulty in managing natural resources, particularly fisheries, is striking the right balance between the competing needs of national and global economic growth and long-term species viability and ecosystem sustainability [62]. As a result of overfishing and fishing practices that harm marine ecosystems, fish stocks worldwide have been under growing strain. Pete Pearson, head of food waste at The World Wide Fund for Nature (WWF), explains that, since fish are wild creatures, we exploit nature when we throw them away [63].

Seafood differs from other food types in terms of its nature, usage, and wastage. Due to their perishability and fragility, fish are particularly susceptible to high spoilage and loss throughout the supply chain. The wastage of seafood is high because it needs intensive supply chain management at every step (e.g., high hygiene levels and specific temperature conditions to remain edible and fresh).

Seafood waste comes from different sources, such as the traditional fishery by-products of fish meal, fish body, and liver oils, fish maw, isinglass, etc. Some other by-products generally processed from fish and fish waste include fish protein concentrate, glue, gelatine, pearl essence, peptones, amino acids, protamine, and fish skin leather. These make seafood waste measurements complex and hard to generally agree upon; thus, direct comparisons between recorded or estimated quantities of waste are challenging. Around 1.5 million tonnes of waste crab, shrimp, and lobster shells are generated annually in southeast Asia alone, accounting for about 6–8 million tonnes of waste worldwide [64].

In the UK, processed fish have a significant amount of inedible material, ranging from 58% for white fish such as cod to 88% for shellfish such as scallops [65]. The high levels of inevitable by-products and the extremely variable characteristics of fish processing procedures mean it is difficult to calculate the amount of waste that might have been avoided. Reductions in seafood waste were expected to improve after WRAP. However, before 2007, sustainable fishing practices were difficult to identify [66]. Moreover, because impacts on producers and the implementation of sustainable fishing practices are currently unidentifiable, it is difficult to tell whether the industry is improving. A review by Hasan, Hecht [67] has highlighted the absence of government statistics on the percentage of aquaculture production in developing nations that utilise aquafeeds (industrial and farm-made) or complete food products (such as junk fish) by primary cultivated species group or farming technique.

The UK has been funding a non-ministerial public agency known as the 'Sea Fish Industry Authority' (Seafish), founded in 1981, to support the fish sector's efforts to promote high-quality, environmentally friendly seafood. Seafish recommends that seafood manufacturers consider where and how waste is generated during processing and across the larger supply chain. In addition, Seafish has organised creative campaigns to emphasise the significance of the shift to a circular economy. For instance, it launched the nationwide initiative of 'Zero Waste Week' where participants include householders, businesses, schools, and community groups who can inspire more people to recycle and decrease the amount of waste sent to landfills (i.e., consider how we spend our limited resources) . Thus, corporate reporting should focus on both reduction quantities (tonnes and percentages) and destinations. Ultimately, to improve resource efficiency, companies should be able to accurately measure such waste. The innovative and convectional uses of seafood waste have been addressed by many scholars e.g., [68,69].

In summary, to aid in designing food waste prevention strategies, it is essential to plot elements of waste generation to expand our understanding of the levels of manufacturing, retail and household seafood waste [47].

2.4. Discussion of Literature Review

The relevant literature to the following three aspect is discussed below.

2.4.1. Technology Role in FLW

Although one-third of UK consumers throw away food due to its use-by date, sixty per cent of the food we throw away yearly is safe to consume. Technological advancement may help reduce the waste that is believed to be inedible regardless of its shape. For example, rather than wasting food by adhering to 'use-by' dates, we can use sensors to measure how fresh the food is.

Since seafood requires a complex storage environment, it is argued that sensors can be useful for reducing seafood waste during the manufacturing and retailing process. Experts have developed sensors, in laboratories, to help overcome food waste since they are far more sensitive. They can help people to understand when to eat the food or not, reducing food waste. Lab-made sensors can be significantly more sensitive than a human nose and can signal not just when food has exceeded a particular level of spoilage (needs to be thrown out) but also when food is almost bad and needs to be eaten or redistributed before being wasted.

Technological advancements can help reduce food waste at various stages in the supply chain. Previous studies (e.g., [70]) have demonstrated that companies' investments in such technologies are justifiable given the cost savings. Investments in technology can be included in companies' annual reports as part of their efforts in food waste reduction

2.4.2. Role of Legislation, Customers' Rights, and Labelling

In addition to voluntary reduction practices by companies, legal compliance is believed to allow a more systematic reduction in seafood waste. Yet, legislation around seafood waste is limited despite its huge impact on the environment and economy. The United Nations and the European Union are two world system organisations tasked with implementing various legislative measures to attain this kind of balance on a global and regional scale, as well as fostering collaboration among its member governments [62]. Three aspects are relevant to legislations around food waste: GHGE, packaging and disposal (destination).

A serious impact of food waste is gas emissions; if FLW is reduced, more emissions can be avoided. Accordingly, legal requirements need to be strengthened, especially to alleviate the impact of waste on the environment. Moreover, both reporting and audits are important in achieving global food waste reduction targets. Therefore, companies would be held accountable through public reporting and more motivated by voluntary reporting. Many UK retailers, such as Tesco, are pioneers in food waste reduction by leading the charge concerning food waste reporting and auditing.

Legislation can also be revised to support innovative uses of seafood waste. This sector discards about 10,000 tonnes of shellfish annually. Thus, the processing business must find ways to increase the marketability and shelf life of freshly caught or farmed fish. Plastics have long been the primary solution for the shelf-life problem. Furthermore, Chitin, abundant in discarded shellfish such as crab shells and squid feathers, can be used to create valuable packing substances [69,71]. Therefore, more regulations are deemed necessary to reduce FLW and plastic use simultaneously.

Another relevant aspect is labelling. Governments are involved in reducing food waste and protecting consumers' rights since both are related. In other words, sometimes food is wasted to comply with health and consumer safety laws. For instance, removing contaminated meat from shelves wastes resources but protects human health. This makes food waste reduction a more complicated task. Therefore, companies need to pay more attention to issues related to safe usages, such as clear 'use by' directions and legible labelling. The UK laws specify the 'use by' rules that leads foods to become former foodstuffs (The UK's regulations state that: "Foods of animal origin or foods that contain products of animal origin and are intended for human consumption may be removed from sale when they: have passed their sell by or use by date". Regulations are available at https://www.gov.uk/guidance/how-food-businesses-must-dispose-of-food-and-former-foodstuffs, accessed on 19 August 2022).

The nature of seafood makes it very different from other food in terms of labelling rules. For example, while seafood has labels for 'use by' to highlight the possible risks to safety, fruit, on the other hand, has 'best before' labels. As a result, improved labelling rules can help reduce food waste. However, different food types necessitate different rules and guidelines. For instance, it has been announced that M&S would be removing 'best before' labels from 300 fruit and vegetable items to cut food waste, instead allowing customers to use their judgment regarding food suitability for eating (from the Guardian, available online: https://www.theguardian.com/environment/2022/jul/17/ms-to-remove-best-before-labels-from-300-fruit-and-veg-items-to-cut-food-waste, accessed on 19 August 2022). Reducing seafood waste requires balancing consumers' rights and protecting the environment.

2.4.3. Reporting Frameworks on Accounting for Food Waste

In general, lost and wasted food is denoted by the difference between the food supply and the food consumed by the population [19]. Countries are believed to differ (e.g., wealthy

vs. unwealthy) in the proportion of food wasted to the overall food produced. However, waste data may not be easily comparable between countries/companies due to differences in how they classify and record waste. Therefore, global FLW standards are essential in order to increase comparability and thus facilitate the best reduction results. Consequently, this may necessitate more national laws and regulations to optimally reduce FLW. Consequently, corporations, governments, and other groups have introduced some worldwide frameworks to aid in the monitoring, reporting, and managing of FLW.

The Waste and Resources Action Programme (WRAP), a British registered charity established in 2000, seeks to reduce food, packaging, and supply chain waste globally and improve its sustainability. It aims at lowering GHE, preserving natural resources, and assisting people in saving money by altering how food is produced and consumed. Collaboration, investigation, and bravery are necessary for transformations of this magnitude. All will have a greater effect on people and the environment [72]. WRAP is meant to aid organisations, communities, and individuals in their efforts to recycle, reuse, and cut down on food waste (e.g., 'Love Food, Hate Waste' and 'Recycle Now' campaigns). The scope of WRAP's operations has been expanding globally through collaboration with UNEP and the FAO and the creation of a global food waste guidelines tool [73]. Worldwide, food and beverage voluntary agreements have benefited from WRAP's assistance [74]. WRAP experts have created joint initiatives that help businesses cut down on food waste and GHGE while safeguarding vital water supplies. As of 2022, 351 UK organisations are committed to WRAP, many of which are seafood companies [75].

Food waste in the UK, based on a (2018) report by WRAP, includes 6.6 million tonnes (70%) from households, 1.5 million tonnes (16%) from manufacturers, 1.1 million tonnes (12%) from hospitality and food service and 0.3 million tonnes (3%) from the retail industry [53]. When food items are abandoned or diverted from the supply chain, they are termed 'food waste' and include either edible or non-edible parts [3,4]. The ethical point of view considers that major retailers should address the issue with their suppliers, which may conflict with their profit maximisation interests. A company's balance between generating a profit and doing good for the community is the essence of corporate social responsibility. In essence, the Seafish charity and the broader seafood business highly value social responsibility.

WRAP studies show that five stores had disclosed time-series data on FLW from their operations, four of which indicates a decrease from 2013 to 2017/18 [53]. Efforts to reduce food waste may be made at every stage of the supply chain and what is done (or not done) in one section of the chain impacts others. Therefore, actions should not be limited to targeting individual parties in the chain [64]. Reporting requirements should consider seafood supply chain complexities by disclosing the cooperation between all actors and parties [6].

The legislative opportunity to effectively reduce FLW is essential for the UK because it emphasises businesses' duties concerning waste management and use. Specifically, business undertakings have to take all possible measures to follow the FLW hierarchy as follows: (a) prevention; (b) preparing for re-use; (c) recycling; (d) other recovery (for example energy recovery); and lastly (e) disposal to landfill [76].

2.5. Recommendations for Regulatory Reform

It is generally agreed that reporting is a source of corporate accountability [66]. Drawing on stakeholder theory, all people, organisations, and governments are interested and should actively participate in FLW reduction plans. This requires compliance with FLW and emissions regulations, followed by reporting. FLW reporting is still voluntary in the UK and whether non-financial information should be voluntary or compulsory in corporate reports is a contentious issue. Consultations by the UK government aim to obtain opinions on whether to mandate FLW reporting or keep everything as it is.

Based on the relevant literature and the breadth of the seafood FLW issues, this paper suggests three action points that can form an interdisciplinary framework to help tackle food waste in the UK as follows.

- Technological advancements can help reduce food waste at various stages in the supply chain. For example, sensors developed by scientists offer cause for optimism in addressing seafood waste and loss during the manufacturing stage.
- Legislation can be reviewed and transformed to include more legal requirements, especially on the impact of waste on the environment. For instance, food waste reduction destinations need to be considered in terms of minimizing emissions . Thus, it is expected that legal compliance, in addition to voluntary initiatives by companies, will lead to a further decrease in seafood waste.
- Corporate reporting rules can be enforced to keep firms more transparent about their reduction strategies and their performances toward the achievement of their food waste reduction targets. Pioneering FLW reduction companies such as Tesco argue that, unless obligatory reporting is implemented, the UK will fall short of the SDG on food waste. Therefore, the UK government's consultation seeking views on mandatory reporting is essential. However, the government is still unclear as to whether the tendency toward more rules in this matter will continue or not. Nevertheless, WRAP has an optimistic view and argues that if present trends continue, the UK is on track to achieve UN SDG 12.3 [53].

The paucity of information on the progress toward decreasing food waste hinders the achievement of the SDG 12.3 target [52]. Given the weak compliance with the current voluntary framework, a shift must be made toward mandatory sources of information. In general, for the aspects of FLW that are improving, mandatory regulations should be increased (such as GHGE).

The ambitious commitments of retailers involve other aspects, such as packaging, that aim at saving the environment. In several food industries, reducing food waste may help reduce related packaging waste and vice versa. Therefore, mandating regulations on packaging (e.g., reducing packaging waste) may increase material efficiency and minimise the cost of waste management. Food packaging has attracted researchers' attention since it is associated with more waste. There are opportunities for firms to reduce certain kinds of packaging, such as plastic, to avoid the plastic packaging tax. Those relevant to seafood are available on the Seafish website.

More research is required to examine possible barriers that may prevent companies from measuring and reporting food waste, such as a lack of knowledge regarding FLW, motivation, and confidence in businesses' skills to measure it robustly. Therefore, stronger business collaboration toward global targets may be ensured if measurement training and reporting were mandatory.

Figure 3 presents the proposed framework to foster FLW reduction in the UK.

2.6. The Role of FLW Reporting

All phases of the supply chain (from collection through distribution to final consumers) must be included in any comprehensive strategy towards reducing FLW. As a technique to promote the expansion of environmental reporting, it has been proposed by Harte and Owen [77] that compliance with external standards be explored. This is because a company not only learns the extent to which its activities contribute to food waste but also gains a clearer picture of the sources of that waste and the damage it causes. This helps in overcoming any lack of data and paving the way for more focused strategies to cut down on food waste. Effective policies for FLW reduction are based on measuring and tracking wastage. Accordingly, accurate and reliable corporate reporting is essential in monitoring businesses' performance toward global and national targets. However, in the UK, FLW reporting is still not mandatory.

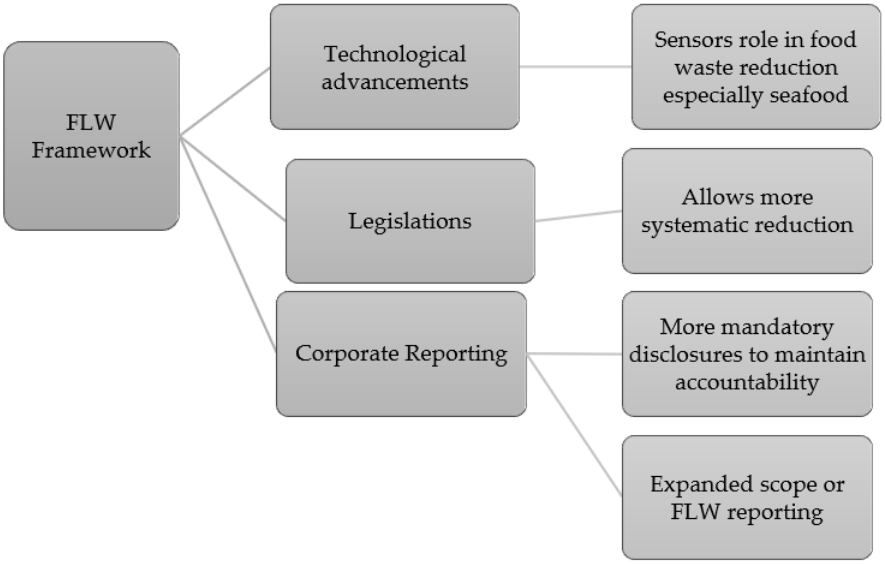

Figure 3. Multidisciplinary framework to address seafood waste in the UK.

Out of the UK's ten targets at business, industry, or national levels, only three include mandatory reporting (human rights, plastics, and climate change). In fact, the UK's strategy to reduce FLW in the business sector has been entirely voluntary, with action conducted via agreements similar to the Courtauld Commitment 1 (introduced in 2005), the latest version of which was, in 2021, introduced for Commitment by 2030. In addition, the Food Foundation has launched 'The Plating Up Progress' project, a set of measures covering ten different categories to evaluate companies' overall progress towards more healthy, equitable, and environmentally friendly food systems. These indicators are meant to promote systems thinking and more openness for enterprises. Moreover, stakeholders' (such as investors) engagement in these problems may be boosted by those with authority throughout the organisation's future activity.

The UK government has urged firms to actively participate in WRAP's framework . Larger food enterprises have also been encouraged to establish waste food minimisation objectives per SDG 12.3 and report on those. In addition, the UK plans to collect data on various national FLW indicators to gauge the efficacy of its Resources and Waste Strategy (RWS). RWS integrates immediate measures with long-term promises, providing a clear policy trajectory in keeping with the 25-Year Environment Plan [53].

Currently, around 200 large food companies already measure their food waste as part of WRAP and have attained financial and environmental advantages [53]. For example, 26 prominent UK-based businesses (comprising shops, caterers, quick service, and casual dining restaurants), evaluated in 2020 by the 'Plating Up Progress', revealed that commitments and disclosures on operational food waste reduction, in general, are stronger than those targeting supply chain food waste. Therefore, FLW reduction may be improved if specialised standards are applied for diverse supply chain participants, such as restaurants.

Seafood is the planet's most widely traded food product (Koonse, 2016), which makes its supply chain complex and prone to many issues, such as mislabeling (Shehata et al., 2019). Such issues can make the efforts of waste reduction harder. A satisfactory level of reporting by seafood firms is made more challenging due to its complexity. Supporting domestic seafood production, year-round employment, the recovery of endangered species and their habitats, and fortifying coastal ecosystems depend on marine aquaculture (often called farmed seafood) [65].

Concerning fishermen, the FAO has highlighted that, when state entities report best practices that are clear and effective, such as control measures for fish harvesting, there is a reduction in bycatch and associated mortality [78]. Such disclosure guidelines help

make firms more accountable. Non-financial and website disclosures can signify CSR as a strategic objective of firms [79].

In summary, data availability and reporting are vital to track progress, but corporate reporting also relies on good data. The Food Foundation (2022) argues that good FLW data are essential for three parties; for businesses to drive improvements in their operations and supply chains, for investors to comprehend risks and prospects of investment, and for governments to evaluate progress towards nationwide targets. Improved FLW reporting needs to focus more on the aspects of the role of the consumers, of supply chain participants, and GHGE.

2.6.1. Cooperation with Consumers

Food's ultimate destination is to be eaten by consumers. While attitudes regarding food waste have changed, most people in the UK still believe that they do not produce any food waste. This is because they misunderstand the broader concept of waste. Governments worldwide have continuously encouraged consumers to reduce food waste. However, government cooperation with customers may not be sufficient to achieve the reduction targets effectively. Therefore, retailers can improve the role of the consumer since food waste is fairly measurable (i.e., quantities are recorded).

Moreover, regulators can emphasise the importance of consumer education. For instance, food safety and storage basics, as well as composting basics, can be learned by consumers so they can actively participate in food waste reduction. According to Abeliotis, Lasaridi [80], the skills and knowledge subcategory of food waste preventative strategies include common-sense consumer practices such as making lists and scheduling meals in advance. Businesses need to be more transparent in reporting on their efforts in this matter.

The focus on consumers is necessary for the UK case because, in wealthy nations, food waste occurs most often during consumption [1,81]. Consumers can be educated on the following points. First, FLW reduction has a business case; the typical UK home may save £500 annually [73]. Second, studying consumers' needs and preferences is essential since FLW reduction could be enhanced by matching the demand and supply of food. Overproduction and over-display lead to more waste [82]; thus, food crises may occur due to a disconnect between supply and demand and poor internal or external communication. Third, successful initiatives to reduce food waste must determine 'why' people throw perfectly good food away. Therefore, many retailers have removed 'best before' dates for fruit and vegetables. Fourth, consumption strategies, such as consumer campaigns and Marine Stewardship Council certification, have greatly progressed [66]. Still, greater attention must be paid to the intersection between production and consumption. Finally, companies may cooperate with consumers by effectively stressing the value of FLW reduction and connecting this to the lowering of GHGE, among other important social and economic advantages (e.g., increased food prices for consumers and businesses if FLW is not reduced). The role of consumers needs to be strengthened since their involvement in reducing GHGE is crucial (by reducing avoidable waste).

2.6.2. Supply Chain Participants

Food is wasted in multiple locations and involves different supply chain participants. For example, research undertaken by WRAP found that the UK wasted 6.6 million tonnes of household food in 2018 [53]. The literature on seafood waste reduction has focused on techniques and the 'know-how' category that covers prevention methods, since these are preferable in the food waste hierarchy. These range from focusing on households to focusing on retailers and businesses. Several studies have discussed consumer behaviours, such as using shopping lists and meal plans, while others have focused on conceptual frameworks to address how some businesses address food waste (e.g., those in the hospitality industry) [83]. WRAP argues that firms must exert more effort to curb pollution (i.e., emissions) and provides helpful resources for food and beverage companies looking to minimise their own Scope 1 and 2 GHGE from internal operations.

Moreover, prior research shows that food waste might be connected to the increased power of some supply chain participants. As a result of their tremendous market dominance in Australia, supermarkets unfairly claim CSR credit for cutting down on food waste, even as other players in the supply chain shoulder the monetary and ethical costs of this practice [41] (Australia, Japan, Austria, Belgium, Denmark, Kenya, and NZ require retailers to report food waste [51]). Accordingly, supermarkets can be primary adopters of mandated food waste reporting.

2.6.3. Reporting on Greenhouse Gas Emissions

FLW has increased importance due to its contribution to GHG emissions. Emissions from wasted food increase global warming, to an extent that approaches that of the world's automobiles (around 87%). If it were a nation, FLW would be the third-largest contributor to global warming [84]. The food industry is responsible for around 30% of global energy usage p. 3 [1], and around 22% of total emissions. Food processing emits 6%, retail and distribution emits 7%, food consumption emits 8%, and food disposal emits 6% [38].

In the UK, the role of FLW corporate reporting in climate change is partially/indirectly required since quoted companies and certain larger companies are required to report on their Scope 1 and Scope 2 GHGE. Scope 3 reporting is encouraged but remains voluntary (Source: UK government website. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/850130/Env-reporting-guidance_inc_SECR_31March.pdf, accessed on 23 November 2022). The UK government has solicited feedback on a proposal to mandate FLW reporting to protect the environment. Yet, there is a lack of compliance on the part of firms in disclosing emissions caused by or related to food waste. The progress of businesses in reporting GHGE is considerable in certain areas but slower in others. The most highly scored metrics in the UK include Scope 1 and 2 GHGE and 'operational' food waste reduction (Scope 1: All direct emissions from company vehicles and facilities. Scope 2: Indirect emissions from electricity used or purchased by the company. Scope 3: All other upstream and downstream emissions in the value chain, such as those related to procurement, waste, water and travel.). Annual reductions in food waste that have been quantified using this approach can also be used to demonstrate reductions in Scope 3, which covers emissions caused by waste disposal. It has been argued that implementing compulsory food waste reporting in the UK would assist in achieving the goals of the Courtauld Commitment 2025 and the WRAP roadmap. WRAP has developed the first ever technique for reliably measuring and reporting GHGE from the production and consumption of food and drink. Given the lack of voluntary disclosure, we can argue for an increase in mandatory reporting on food waste to maintain GHGE reduction performance and to strengthen the existing mandatory reporting requirements on GHGE.

In summary, firms' current initiatives and reporting compliance with developed frameworks can make them more accountable regarding their environmental impact. Accordingly, holding seafood producers accountable for FLW impact is possible by adopting a production chain perspective, making manufacturers more transparent, and imposing production chain guidelines [66].

3. Conclusions and Recommendations

Cooperation and effort coordination between companies, policymakers, and stakeholders are necessary to achieve FLW reduction targets. FLW reduction help save the environment and scarce resources and saves money. The FLW reduction business case is proven for governments, businesses, and individuals. However, action is required to maintain progress toward global reduction targets. This project suggests three aspects that can form an interdisciplinary framework to help tackle food waste in the UK. First, technological advancements such as sensors can help reduce food waste at various stages in the seafood supply chain. Prior studies, e.g., [70], have shown the business case for FLW, justifying companies' investment in such technologies. Second, legislation can be reviewed and transformed to include more legal requirements, especially on the impact of waste

on the environment, since more food waste means more emissions that can be avoided. Therefore, in addition to the voluntary actions by companies, legal compliance is believed to allow more reduction in seafood waste. Third, financial reporting guidelines such as The Food Loss and Waste Accounting and Reporting Standard developed in 2016 by the Water Resources Institute (WRI) can be enforced to promote international consistency, comprehensiveness, and transparency in FLW reporting by entities beyond the current voluntary approach to reporting. As Peter Drucker argued decades ago, what gets measured gets done. Enforced reporting and measurement standards and governmental regulations could significantly improve FLW reduction.

Beyond governmental regulations and accounting and reporting standards for quantifying and reporting FLW, ongoing scientific research is critical in developing further understanding and building a concerted global action toward its reduction. Prior research has highlighted the significant economic, social, and environmental impact of FLW, which is beginning to garner the attention of researchers. As a result, companies and governments have committed to global FLW reduction targets. However, previous studies have revealed inconsistent compliance with food waste reporting guidelines by firms committed to WRAP.

Several issues relevant to corporate reporting are important to underline based on this literature review. First, several firms have proclaimed their intention to reduce food waste; however, evaluating their progress without relevant evidence is difficult. Mandatory, comparable and consistent rules are best at providing such evidence. Therefore, despite WRAP's optimism regarding the possibility of achieving SDG 12.3, this paper supports mandating food waste reporting requirements. Second, there is a noticeable lack of research on FLW creative initiatives and solutions (e.g., destination) and thus reporting items other than the frameworks which can be beneficial. New waste reduction techniques and destinations are parts of initiatives reported by few studies. Third, a high percentage of seafood waste is caused by the manufacturing process, which means that technology can be applied to reduce such waste.

Overall, governments and corporations worldwide are taking action to reduce FLW. Nevertheless, there is a need for enhanced knowledge of how much food is lost or wasted inside a country's borders, or as a result of its activities, and supply networks. In addition, the lack of a universally accepted definition of FLW and a standardised accounting and reporting structure makes it difficult to compare data and formulate effective solutions. Accordingly, more national and international regulations, including corporate reporting, are required in order to achieve SDG targets. The following points are essential. First, measuring and reporting FLW delivers indirect advantages by assisting enterprises' food waste reductions, as outlined in the Waste (England and Wales) Regulations 2011. Second, breaking down the sources of waste is crucial to develop better applicable standards consistent with the FLW hierarchy and GHGE reduction targets. Lastly, case studies and best reporting practices (e.g., based on the WRAP framework) must be regularly publicised to inspire other businesses.

Lastly, the limitation of this review paper is its lack of full analysis of prior literature. Therefore, we recommend that future research conduct wider scope reviews to suggest more compressive approaches toward reducing FLW.

Author Contributions: J.D.-C.A. and R.R. conceptualised the ideas. J.D.-C.A. developed the methodology. M.A.-T. conducted literature survey and data collection. M.A.-T. and J.D.-C.A. prepared the first version. R.R. reviewed and provided further comments. All authors have read and agreed to the published version of the manuscript.

Funding: The funding provided by the PVC-R Strategic Fund 2021/22 of the University of Essex is gratefully acknowledged. Initial motivation and additional inputs from another funded project, called the REAMIT project, funded by Interreg North-West Europe (NWE831), which is also acknowledged here.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. FAO. *Energy-Smart Food for People and Climate*; FAO: Rome, Italy, 2011.
2. Gustafsson, J.; Cederberg, C.; Sonesson, U.; Emanuelsson, A. *The Methodology of the FAO Study: Global Food Losses and Food Waste-extent, Causes and Prevention"-FAO, 2011*; SIK Institutet för Livsmedel och Bioteknik: Gothenburg, Sweden, 2013.
3. Östergren, K. *FUSIONS Definitional Frameword for Food Waste (FP7-Rapport)*; SIK Institutet för Livsmedel och Bioteknik: Gothenburg, Sweden, 2014.
4. Ivert, L.K.; Dukovska-Popovska, I.; Kaipia, R.; Fredriksson, A.; Dreyer, H.C.; Johansson, M.I.; Chabada, L.; Damgaard, C.M.; Tuomikangas, N. Sales and operations planning: Responding to the needs of industrial food producers. *Prod. Plan. Control* **2015**, *26*, 280–295. [CrossRef]
5. FAO. *The State of World Fisheries and Aquaculture 2020: Sustainability in Action*; Food and Agriculture Organization of the United Nations: Rome, Italy, 2020.
6. Corrado, S.; Caldeira, C.; Eriksson, M.; Hanssen, O.J.; Hauser, H.E.; van Holsteijn, F.; Liu, G.; Östergren, K.; Parry, A.; Secondi, L. Food waste accounting methodologies: Challenges, opportunities, and further advancements. *Glob. Food Secur.* **2019**, *20*, 93–100. [CrossRef] [PubMed]
7. Irani, Z.; Sharif, A.M.; Lee, H.; Aktas, E.; Topaloğlu, Z.; van't Wout, T.; Huda, S. Managing food security through food waste and loss: Small data to big data. *Comput. Oper. Res.* **2018**, *98*, 367–383. [CrossRef]
8. Ritchie, R.; Mispy, O.O. Measuring Progress towards the Sustainable Development Goals, SDG-Tracker. 2018. Available online: https://sdg-tracker.org/ (accessed on 17 September 2022).
9. FAO. *The State of World Fisheries and Aquaculture 2016: Contributing to Food Security and Nutrition for All*; FAO: Rome, Italy, 2016; p. 200.
10. Moraes, N.V.; Lermen, F.H.; Echeveste, M.E.S. A systematic literature review on food waste/loss prevention and minimization methods. *J. Environ. Manag.* **2021**, *286*, 112268. [CrossRef] [PubMed]
11. Gray, R. Taking a long view on what we now know about social and environmental accountability and reporting. *Issues Soc. Environ. Account.* **2007**, *1*, 169–198. [CrossRef]
12. Principato, L. *Food Waste at Consumer Level: A Comprehensive Literature Review*; Springer: New York, NY, USA, 2018.
13. Göbel, C.; Langen, N.; Blumenthal, A.; Teitscheid, P.; Ritter, G. Cutting food waste through cooperation along the food supply chain. *Sustainability* **2015**, *7*, 1429–1445. [CrossRef]
14. Özbük, R.M.Y.; Coşkun, A. Factors affecting food waste at the downstream entities of the supply chain: A critical review. *J. Clean. Prod.* **2020**, *244*, 118628. [CrossRef]
15. Alexander, P.; Brown, C.; Arneth, A.; Finnigan, J.; Moran, D.; Rounsevell, M.D. Losses, inefficiencies and waste in the global food system. *Agric. Syst.* **2017**, *153*, 190–200. [CrossRef]
16. UN. *All Food Systems Are Sustainable*; UN: New York, NY, USA, 2015.
17. Fuchs, D.; Kalfagianni, A.; Arentsen, M. Retail power, private standards, and sustainability in the global food system. In *Corporate Power in Global Agrifood Governance*; MIT Press: Cambridge, MA, USA, 2009; pp. 29–59. [CrossRef]
18. Cuéllar, A.D.; Webber, M.E. Wasted food, wasted energy: The embedded energy in food waste in the United States. *Environ. Sci. Technol.* **2010**, *44*, 6464–6469. [CrossRef]
19. Hall, K.D.; Guo, J.; Dore, M.; Chow, C.C. The progressive increase of food waste in America and its environmental impact. *PLoS ONE* **2009**, *4*, e7940. [CrossRef]
20. Thi, N.B.D.; Kumar, G.; Lin, C.Y. An overview of food waste management in developing countries: Current status and future perspective. *J. Environ. Manag.* **2015**, *157*, 220–229. [CrossRef] [PubMed]
21. Cicatiello, C.; Franco, S.; Pancino, B.; Blasi, E. The value of food waste: An exploratory study on retailing. *J. Retail. Consum. Serv.* **2016**, *30*, 96–104. [CrossRef]
22. Oelofse, S.H.; Nahman, A. Estimating the magnitude of food waste generated in South Africa. *Waste Manag. Res.* **2013**, *31*, 80–86. [CrossRef]
23. Corsten, M.; Worrell, E.; Van, D. *The Potential for Waste Management in Brazil to Minimize GHG Emissions and Maximize Re-Use of Materials*; Utrecht University: Utrecht, The Netherlands, 2012; p. 46.
24. Sezer, K.; Arikan, O. Waste characterization at mixed municipal solid waste composting and recycling facility units. *Desalination Water Treat.* **2011**, *26*, 92–97. [CrossRef]
25. Mohamad, Z.F.; Keng, J. Opportunities and Challenges in Sustainable Waste Management Transition in Malaysia: A multi-level socio-technical perspective. In Proceedings of the Globelics Seminar on Low Carbon Development, Copenhagen, Denmark, 4–5 April 2013.
26. Gokarn, S.; Kuthambalayan, T.S. Analysis of challenges inhibiting the reduction of waste in food supply chain. *J. Clean. Prod.* **2017**, *168*, 595–604. [CrossRef]

27. María, G. Generation and Disposition of MSW in Mexico and Potential for Improving Waste Management in Toluca Municipality. Master's Thesis of Science in Earth Resources Engineering, Columbia University, Toluca, Mexico, 2011.
28. Liu, J.; Lundqvist, J.; Weinberg, J.; Gustafsson, J. Food losses and waste in China and their implication for water and land. *Environ. Sci. Technol.* **2013**, *47*, 10137–10144. [CrossRef]
29. Stefan, V.; van Herpen, E.; Tudoran, A.A.; Lähteenmäki, L. Avoiding food waste by Romanian consumers: The importance of planning and shopping routines. *Food Qual. Prefer.* **2013**, *28*, 375–381. [CrossRef]
30. Adhikari, B.K.; Barrington, S.; Martinez, J. Predicted growth of world urban food waste and methane production. *Waste Manag. Res.* **2006**, *24*, 421–433. [CrossRef]
31. Adhikari, B.; Barrington, S.; Martinez, J. Urban food waste generation: Challenges and opportunities. *Int. J. Environ. Waste Manag.* **2009**, *3*, 4–21. [CrossRef]
32. Graham-Rowe, E.; Jessop, D.C.; Sparks, P. Predicting household food waste reduction using an extended theory of planned behaviour. *Resour. Conserv. Recycl.* **2015**, *101*, 194–202. [CrossRef]
33. Stancu, V.; Haugaard, P.; Lähteenmäki, L. Determinants of consumer food waste behaviour: Two routes to food waste. *Appetite* **2016**, *96*, 7–17. [CrossRef] [PubMed]
34. Visschers, V.H.; Wickli, N.; Siegrist, M. Sorting out food waste behaviour: A survey on the motivators and barriers of self-reported amounts of food waste in households. *J. Environ. Psychol.* **2016**, *45*, 66–78. [CrossRef]
35. Shove, E. Beyond the ABC: Climate change policy and theories of social change. *Environ. Plan. A* **2010**, *42*, 1273–1285. [CrossRef]
36. Liljestrand, K. Logistics solutions for reducing food waste. *Int. J. Phys. Distrib. Logist. Manag.* **2017**, *47*, 318–339. [CrossRef]
37. Mena, C.; Adenso-Diaz, B.; Yurt, O. The causes of food waste in the supplier–retailer interface: Evidences from the UK and Spain. *Resour. Conserv. Recycl.* **2011**, *55*, 648–658. [CrossRef]
38. Scherhaufer, S.; Moates, G.; Hartikainen, H.; Waldron, K.; Obersteiner, G. Environmental impacts of food waste in Europe. *Waste Manag.* **2018**, *77*, 98–113. [CrossRef]
39. Slorach, P.C.; Jeswani, H.K.; Cuéllar-Franca, R.; Azapagic, A. Environmental and economic implications of recovering resources from food waste in a circular economy. *Sci. Total Environ.* **2019**, *693*, 133516. [CrossRef]
40. Gjerris, M.; Gaiani, S. Household food waste in Nordic countries: Estimations and ethical implications. *Etikk I Praksis-Nord. J. Appl. Ethics* **2013**, *7*, 6–23. [CrossRef]
41. Devin, B.; Richards, C. Food waste, power, and corporate social responsibility in the Australian food supply chain. *J. Bus. Ethics* **2018**, *150*, 199–210. [CrossRef]
42. Arvanitoyannis, I.S.; Kassaveti, A. Fish industry waste: Treatments, environmental impacts, current and potential uses. *Int. J. Food Sci. Technol.* **2008**, *43*, 726–745. [CrossRef]
43. FAO. *Food Wastage Footprint & Climate Change*; FAO: Rome, Italy, 2015.
44. Buzby, J.C.; Hyman, J. Total and per capita value of food loss in the United States. *Food Policy* **2012**, *37*, 561–570. [CrossRef]
45. United Nations Statistics Division, U.N.S.D. *Food Waste per Capita*; 2019 Division; U.N.S.D.: New York, NY, USA, 2020.
46. Thyberg, K.L.; Tonjes, D.J. Drivers of food waste and their implications for sustainable policy development. *Resour. Conserv. Recycl.* **2016**, *106*, 110–123. [CrossRef]
47. Schanes, K.; Dobernig, K.; Gözet, B. Food waste matters—A systematic review of household food waste practices and their policy implications. *J. Clean. Prod.* **2018**, *182*, 978–991. [CrossRef]
48. Garcia-Garcia, G.; Woolley, E.; Rahimifard, S.; Colwill, J.; White, R.; Needham, L. A methodology for sustainable management of food waste. *Waste Biomass Valoriz.* **2017**, *8*, 2209–2227. [CrossRef] [PubMed]
49. Filimonau, V.; Gherbin, A. An exploratory study of food waste management practices in the UK grocery retail sector. *J. Clean. Prod.* **2017**, *167*, 1184–1194. [CrossRef]
50. Department for Environment Food and Rural Affairs (DEFRA). *Consultation on Improved Reporting of Food Waste by Large Food Businesses in England*; Department for Environment Food and Rural Affairs: London, UK, 2022.
51. UNEP. *Reducing Consumer Food Waste Using Green and Digital Technologies*; Copenhagen and Nairobi; Partnership and United Nations Environment Programme: Nairobi, Kenya, 2021.
52. Hanson, C.; Mitchell, P. The business case for reducing food loss and waste. *Rep. Behalf Champions* **2017**, *12*, 7–8.
53. Parry, A.; Harris, B.; Fisher, K.; Forbes, H. *UK Progress against Courtauld 2025 Targets and UN Sustainable Development Goal 12.3*. 2020. Available online: https://wrap.org.uk/resources/report/uk-progress-against-courtauld-2025-targets-and-un-sustainable-development-goal-123 (accessed on 11 September 2022).
54. Hu, X.F.; Chan, H.M. Seafood Consumption and Its Contribution to Nutrients Intake among Canadians in 2004 and 2015. *Nutrients* **2020**, *13*, 77. [CrossRef]
55. Naylor, R.L.; Kishore, A.; Sumaila, U.R.; Issifu, I.; Hunter, B.P.; Belton, B.; Bush, S.R.; Cao, L.; Gelcich, S.; Gephart, J.A. Blue food demand across geographic and temporal scales. *Nat. Commun.* **2021**, *12*, 5413. [CrossRef]
56. Teh, L.C.; Sumaila, U.R. Contribution of marine fisheries to worldwide employment. *Fish Fish.* **2013**, *14*, 77–88. [CrossRef]
57. Balraj, T.H.; Palani, S.; Arumugam, G. Influence of Gunapaselam, a liquid fermented fish waste on the growth characteristics of Solanum melongena. *J. Chem. Pharm. Res.* **2014**, *6*, 58–66.
58. Estevez, M.M.; Sapci, Z.; Linjordet, R.; Morken, J. Incorporation of fish by-product into the semi-continuous anaerobic co-digestion of pre-treated lignocellulose and cow manure, with recovery of digestate's nutrients. *Renew. Energy* **2014**, *66*, 550–558. [CrossRef]

59. Ghaly, A.; Ramakrishnan, V.; Brooks, M.; Budge, S.; Dave, D. Fish processing wastes as a potential source of proteins. *Amino Acids Oils Crit. Rev. J. Microb. Biochem. Technol* **2013**, *5*, 107–129.
60. Kazemi, K.; Zhang, B.; Lye, L.M.; Zhu, Z. Evaluation of state and evolution of marine fish waste composting by enzyme activities. *Can. J. Civ. Eng.* **2017**, *44*, 348–357. [CrossRef]
61. Whitehair, K.J.; Shanklin, C.W.; Brannon, L.A. Written messages improve edible food waste behaviors in a university dining facility. *J. Acad. Nutr. Diet.* **2013**, *113*, 63–69. [CrossRef] [PubMed]
62. Wild, S. Sustainability reporting in fishing industry management-regulation versus voluntarism. *Australas. Account. Bus. Financ. J.* **2008**, *2*, 57–75. [CrossRef]
63. Nemecky, S. *The Untrawled Truth: Why EU Fisheries (Control) Policy Should Strengthen Discard Monitoring, Control and Reporting within an Implemented Landing Obligation*; WWF: Morges, Switzerland, 2022.
64. FAO. *The State of World Fisheries and Aquaculture: Opportunities and Challenges*; Food and Agriculture Organization of the United Nations Rome: Rome, Italy, 2014; Volume 4, pp. 40–41.
65. Pardo, M.Á.; Jiménez, E.; Pérez-Villarreal, B. Misdescription incidents in seafood sector. *Food Control* **2016**, *62*, 277–283. [CrossRef]
66. Iles, A. Making the seafood industry more sustainable: Creating production chain transparency and accountability. *J. Clean. Prod.* **2007**, *15*, 577–589. [CrossRef]
67. Hasan, M.R.; Hecht, T.; De Silva, S.S.; Tacon, A.G. *Study and Analysis of Feeds and Fertilizers for Sustainable Aquaculture Development*; Food and Agriculture Organization of the United Nations Rome: Rome, Italy, 2007.
68. Coppola, D.; Lauritano, C.; Palma Esposito, F.; Riccio, G.; Rizzo, C.; de Pascale, D. Fish waste: From problem to valuable resource. *Mar. Drugs* **2021**, *19*, 116. [CrossRef]
69. Teixeira-Costa, B.E.; Andrade, C.T. Chitosan as a valuable biomolecule from seafood industry waste in the design of green food packaging. *Biomolecules* **2021**, *11*, 1599. [CrossRef]
70. Cattaneo, A.; Sánchez, M.V.; Torero, M.; Vos, R. Reducing food loss and waste: Five challenges for policy and research. *Food Policy* **2021**, *98*, 101974. [CrossRef]
71. Yadav, M.; Goswami, P.; Paritosh, K.; Kumar, M.; Pareek, N.; Vivekanand, V. Seafood waste: A source for preparation of commercially employable chitin/chitosan materials. *Bioresour. Bioprocess.* **2019**, *6*, 8. [CrossRef]
72. Gooch, M.; Felfel, A.; Marenick, N. *Food Waste in Canada*; Value Chain Management Centre: Oakville, ON, Canada, 2010; Available online: https://vcm-international.com/wp-content/uploads/2013/04/Food-Waste-in-Canada-112410.pdf (accessed on 20 October 2022).
73. WRAP. Action on Food Waste. Available online: https://wrap.org.uk/taking-action/food-drink/actions/action-on-food-waste (accessed on 20 October 2022).
74. Cooper, J. Briefing: Food waste–next steps for food processors and manufacturers. In Proceedings of the Institution of Civil Engineers-Waste and Resource Management; ICE: London, UK, 2018; pp. 91–93.
75. Smillie, D.; Devine, R.; Charlesworth, E.; Riley, S. *Food Waste Reduction Roadmap Progress Report 2022*; WRAP: Banbury, UK, 2022.
76. European Commission. Brief on Food Waste in the European Union. 2020. Available online: https://joint-research-centre.ec.europa.eu/publications/brief-food-waste-european-union_en (accessed on 9 August 2022).
77. Harte, G.; Owen, D. Environmental disclosure in the annual reports of British companies: A research note. *Account. Audit. Account. J.* **1991**, *4*, 51–61. [CrossRef]
78. FAO. *Guidance on Core Indicators for Agrifood Systems—Measuring the Private Sector's Contribution to the Sustainable Development Goals*; FAO: Rome, Italy, 2021.
79. Di Vaio, A.; Varriale, L.; Di Gregorio, A.; Adomako, S. Corporate social performance and non-financial reporting in the cruise industry: Paving the way towards UN Agenda 2030. *Corp. Soc. Responsib. Environ. Manag.* **2022**, *29*, 1931–1953. [CrossRef]
80. Abeliotis, K.; Lasaridi, K.; Chroni, C. Food waste prevention in Athens, Greece: The effect of family characteristics. *Waste Manag. Res.* **2016**, *34*, 1210–1216. [CrossRef] [PubMed]
81. Licciardello, F. Packaging, blessing in disguise. Review on its diverse contribution to food sustainability. *Trends Food Sci. Technol.* **2017**, *65*, 32–39. [CrossRef]
82. EEA. *EEA Signals 2014—Well-Being and the Environment from Production to Waste: The Food System*; EEA: Copenhagen, Denmark, 2014.
83. Papargyropoulou, E.; Wright, N.; Lozano, R.; Steinberger, J.; Padfield, R.; Ujang, Z. Conceptual framework for the study of food waste generation and prevention in the hospitality sector. *Waste Manag.* **2016**, *49*, 326–336. [CrossRef]
84. Edenhofer, O. *Climate Change 2014: Mitigation of Climate Change*; Cambridge University Press: Cambridge, UK, 2015; Volume 3.