

Behaviors against food loss and waste: an analytical index of private policies

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Abstract

Purpose – The paper aims to develop a pioneering assessment index for private policies targeting food loss and waste (FLW) reduction.

Design/methodology/approach – Starting with a review of seminal works on FLW, identifies variables related to corporate actions addressing FLW, process efficiency and sustainability. This process ensures that the developed indicators are robust, adaptable and suitable for diverse food processing organizations. The model's applicability is enhanced by its alignment with publicly disclosed corporate reports, allowing a practical interface between theoretical development and market realities.

Findings – Introduces eight strategic indicators for evaluating private policies, FLW reduction policies, process innovations, measurement methodologies, partnerships, environmental actions, communication and the use of natural resources (water and energy). These indicators enable a nuanced evaluation of how organizations operationalize FLW strategies in markets with varying levels of development.

Research limitations/implications – The indicators' effectiveness may vary depending on sectoral and regional specificities. Although this study focuses on food processing organizations, the model's adaptability to different industries and geographical contexts offers potential avenues for further exploration.

Practical implications – The model provides organizations with a robust tool to monitor and refine FLW reduction strategies using transparent, evidence-based metrics. The indicators can evaluate organizational actions comparatively, across different entities or overtime, facilitating continuous improvement.

Social implications – Implementing FLW prevention strategies at the organizational level improves efficiency, reduces costs and promotes equitable resource allocation and environmental preservation. By applying these indicators, companies can enhance their contributions to societal goals.

Originality/value – An unprecedented assessment model tailored to private FLW policies, filling a critical gap in the literature. Its originality lies in its ability to operationalize sustainability in corporate contexts, enabling stakeholders to evaluate actions consistently across markets with diverse developmental profiles. The indicators' versatility underscores their potential as a transformative tool for researchers, practitioners and policymakers.

Keywords SDGs, Corporate strategies, Index, Assessment, Evaluating

Paper type Research paper



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1. Introduction

The global governance of environmental and sustainable development has acquired new institutional designs and arrangements. The protagonist role of international organizations, such as the United Nations, is a prominent element in this international scenario focused on solving issues of great complexity (Speth & Haas, 2007). The 17th sustainable development goals (SDGs), formally launched by the United Nations in 2015 as part of a resolution called the 2030 Agenda, represent a milestone in the current governance configuration, characterized by a crowdsourcing approach (Gellers, 2016) and by the sharing of goals, particularly qualitative ones (Biermann, Kanie, & Kim, 2017).

Another noteworthy characteristic is the strong participation of non-state actors such as the private sector in multilevel and polycentric arrangements, as well as specific policies aimed at promoting more sustainable production methods (Makishi, Veiga, & Zacareli, 2017). If on the one hand these loosely defined institutional arrangements involving broad participation and relatively flexible objectives (as compared to the SDGs) promoted strong adherence of the international community and the possibility for states to define their own plans, on the other hand the lack of precise indicators and targets to monitor progress represents an important trade-off of this structure (Biermann, Kanie, & Kim, 2017).

It is interesting to note how SDG indicators have been appropriated and disseminated by the productive private sector, and how they tend to spill over to other areas. To a significant extent, incentives for the adoption of these practices stem from the intense pressure exerted by consumers and activist groups, as well as from adherence, either voluntary or compulsory, to international market agreements and requirements. In the specific case of FLW, as will be discussed later, private policies for reduction and mitigation align with the need to improve process efficiency, which has great economic appeal and reflects on greenhouse gas emissions (Munesue, Masui, & Fushima, 2015) (Porter, Reay, Higgins, & Bomberg, 2016). In addition to economic and environmental concerns, FLW has a social dimension. Wasting food when more than 820 million people go hungry daily (FAO, Ifad, Unicef, Wfp, & Who, 2021) is paradoxical, to say the least.

However, private policies to reduce FLW are still poorly publicized. As large corporations adopt and disseminate social and environmental responsibility policies, they stimulate other companies to follow such practices. Although part of these initiatives could be described as greenwashing, it must be recognized that the spillover effect of good practices can generate positive social and environmental gains. To better understand these effects, it is important to monitor how close we are to the defined targets.

In light of this foundation, this research delves into the evaluation of private policies concerning food loss and waste (FLW). More precisely, it takes a bottom-up approach to craft indicators for the evaluation of such private policies aimed at addressing FLW.

2. Food loss and waste in the context of the United Nations

The 2030 Agenda is a global plan designed and disseminated by the United Nations to promote sustainable development and eradicate poverty [1].

The existence of a specific target for FLW (SDG 12.3) confirms that FLW reduction will contribute to ending hunger and making consumption and production systems more sustainable (Cattaneo, Sánchez, Torero, & Vos, 2021), and that such a reduction is a priority in the global and national political agenda (Xue et al., 2017). Fabi et al. (2021) further noted that discussions on FLW received increased attention, especially after the 2007–2008 food crisis, rekindling the debate on global food availability.

FLW is a theme that attracts great interest because of its connection with hunger, poverty and misery, all aggravated by the COVID-19 pandemic. It can be caused by a variety of

factors, depending on type of food, stage of the supply chain, cultural aspects and geographical context. Such factors make it difficult to identify universal causes of FLW, highlighting the need for research with a systematic, holistic and specific approach toward FLW occurrence (Gustavsson & Ostergren, 2015); (Lourenco et al., 2022).

According to FAO, food loss is defined as a reduction in food availability for human consumption along the supply chain, which can be related to production, post-harvest and processing phases (Parfitt, Barthel, & Macnaughton, 2010); (FAO, 2012); (FAO, 2019). By contrast, waste refers to losses that occur at the end of the supply chain, that is, over retail and final consumption phases, as well as those related to the behavior of retailers and consumers (Parfitt, Barthel, & Macnaughton, 2010); (FAO, 2012); (FAO, 2019). It is estimated that more than a third of the global food production is lost or wasted, representing more than 1.3 billion tonnes per year, enough to feed two billion people (FAO, 2023).

Inefficiency in food production and cultivation, infrastructure, internal capacity, sales and distribution channels, as well as in consumer purchase and use practices, is intrinsically related to FLW (FAO, 2019). Fabi et al. (2021) pointed out that losses at the farm level are a major cause of concern in low-income countries where farmers operate with low technical efficiency and technology adoption is limited. In developing countries, poor storage facilities and lack of infrastructure are important causes of food loss, even in the post-harvest phase. Fresh foods, such as fruits, vegetables, meat and fish, can spoil in hot climates as a result of the lack of adequate infrastructure for transportation, storage, refrigeration and commercialization [2] (FAO, 2012); (Fabi, Cachia, Conforti, English, & Moncayo, 2021).

The lack of adequate processing facilities is another catalyst of food loss in developing countries. In many situations, the food industry has insufficient capacity to process and preserve fresh agricultural products to meet market demands. Part of the problem traces to production seasonality and high level of investment required to build processing facilities that will not be used during the whole year. Cattaneo et al. (2021) explained that FLW can be understood quantitatively, for instance in relation to the amount of food that enters the supply chain, and qualitatively, when food attributes are affected, reducing the value of food products for the intended uses.

Such observations on the causes of FLW in developing countries are corroborated by the findings of Dora et al. (2021). Based on a large systematic review (1998–2018) on FLW and the circular economy, the aforementioned authors developed a conceptual model for FLW prevention. The authors reported that, in high-income countries, FLW mainly occurs during distribution and consumption, whereas in low-income countries, it is concentrated in the production and post-harvest stages. A similar conclusion was reached by Fabi et al. (2021) when they affirm that waste is the predominant concern in high-income countries at the consumption level, given that the existing incentive structures allow economic agents to be more efficient in reducing losses.

Delgado, Schuster & Torero (2021) analyzed five food value chains in six developing countries, and testing three new measurement methodologies. The most important contribution of the proposed methodology was that it allows losses to be broken down at the level of the farmer, intermediary and processor and to incorporate both the concept of quantitative loss (for example, of the product itself throughout the value chain) and qualitative loss (the product was affected by quality deteriorations).

Xue et al. (2017), in a literature review, argued that most studies published up to then had been carried out in industrialized countries and, according to the available data, indicated that per capita food waste increased with the increase in GDP per capita. The authors also observed that household food waste represented a greater share of the total FLW in middle- and high-income countries. More systemic aspects are also relevant to FLW analyses, as

discussed by [Spang et al. \(2019\)](#). The authors analyzed food losses and waste within the Driver-Pressure-State-Impact-Response (DPSIR) framework, developed by the European Environment Agency in 1999 and concluded that current research focuses on pressures and does not consider underlying systemic factors, especially such as health, infrastructure, the sociocultural values and norms and the structural dynamics of the broader food system.

3. Construction of assessment indicators for private policies against food loss and waste

It is understood that the function of a qualitative or quantitative indicator or parameter is to serve as an instrument for collecting, organizing and measuring relevant information about changes in the characteristics and actions of agents belonging to an economic system. The monitoring of these indicators, through data collection and systematization with a longitudinal perspective (retrospective or prospective), allows us to identify changes in the actions, behaviors and performance of agents and the system itself. To this aim, it is possible to use publicly available information or data extracted from corporate reports.

[Gallopín \(1996\)](#) states that indicators should be used to summarize or otherwise simplify relevant information by making certain phenomena more apparent. The goal is to aggregate and quantify information about complex phenomena to improve communication and decision-making.

A literature review on FLW provided a basis for the identification of multiple variables and actions. A broad set of variables directly or indirectly related to FLW was obtained, requiring significant effort to systematize and organize the framework of the study. The set of indicators generated within the scope of the current study has a comprehensive nature, not being restricted to a single type of food processing industry or sector of the economy. The objective is to have sufficient flexibility to indicate procedures that can be adopted in the management of different companies, with lower or greater degree of integration with their production chains. The construction of the model proposed herein followed the steps presented in [Figure 1](#) and discussed in Chapters 3–5 of this paper.

As the literature does not yet provide predefined indicators for analyzing private policies against FLW, our methodology focused on:

- Initial Exploration of studies from FAO, mainly [FAO \(2012, 2019\)](#), [\(Parfitt, Barthel, & Macnaughton, 2010\)](#) and [Dora et al. \(2020\)](#) which discuss the causes and consequences of loss and waste in the different segments of the food production chain.
- Iterative Refinement: building on this foundation, additional studies were identified through a feedback process. This ensured the inclusion of contemporary insights and a comprehensive understanding of the topic ([Figure 1](#), Stage 1).

The first stage was developed from secondary data on the construction of indicators and measures of FLW, collected through a systematic search for articles published by peer-reviewed journals. They were selected indicators including those specifically related to the food industry and those concerning sectors related to the food and beverage production chain but that were adapted to the food industry. A snowball search strategy was chosen. Since authors such as [Reid & Miedzinski \(2008\)](#) and the Global Reporting Initiative, new papers have been identified and included in the analysis. These works led to other works and this logic was followed until there began to be a repetition of works, without the identification of new references.

Fifteen papers were selected and analyzed, as [Beretta et al. \(2013\)](#), [Giuseppe, Mario & Cinzia \(2014\)](#), [Richter & Bokelmann \(2016\)](#), to identify indicators and sub-indicators of actions that could directly or indirectly contribute to minimizing FLW in food processing

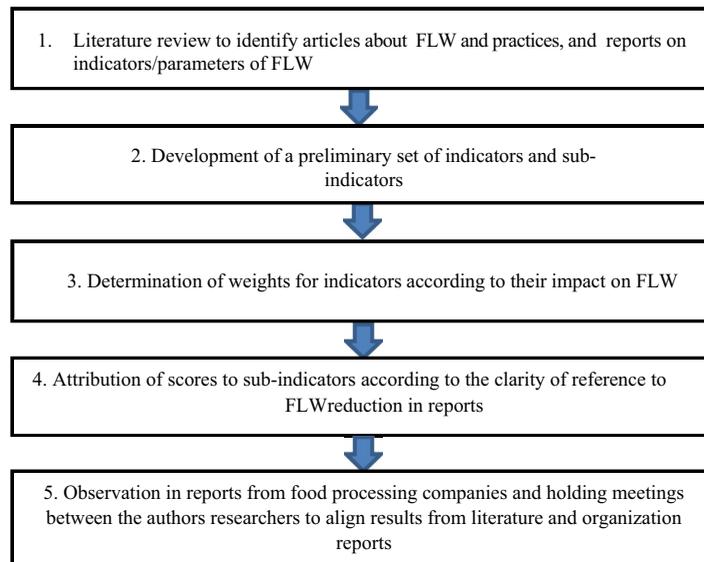


Figure 1. Stages of the construction of a hierarchy system for good practices on food loss and waste (FLW) reduction

Source: Prepared by the authors

organizations, and that were mentioned by stakeholders. Indicators with direct relation to FLW were identified, such as policies to reduce FLW and innovation in production processes. Some examples of convergence of the FLW theme with food processing can be seen in the literature from [Rosler, Kreyenschmidt & Ritter \(2021\)](#), with collected data from thirteen German companies. The author's findings summarize recommendations for good practice, which cover the entire supply chain from supplier to consumer. [Garrone et al. \(2016\)](#) brought two contributions: adaptation of the food waste hierarchy to food manufacturing companies, refining it by including more pertinent options and identification of the main critical factors that enable food manufacturing companies to set in place an efficient and effective process for managing surplus food and for supplying it to the food assistance sector.

Indicators with indirect impacts, such as environmental sustainability initiatives and efficient use of natural resources, particularly water and energy can also be found in papers such as [Ait Hsine, Benhammou & Pons \(2005\)](#) and [Kalmykova, Sadagopan & Rosado \(2018\)](#).

The costs and benefits of reducing FLW do not necessarily fall on the same agents ([Bleakeney, 2019](#)), a consequence of the failures of market mechanisms to prevent FLW occurrence throughout the agrifood production chain. Similarly, [Segrè et al. \(2014\)](#) argued that there may be different basic conditions that explain the occurrence of FLW: microeconomic factors – mainly those originating upstream of production systems (imperfect data and markets, price transmission, uncertainty and income) and that impact the entire chain; – macroeconomic factors (employment structure, inflation, etc.); and those of a non-economic nature, such as legislation, culture and climate. Despite these particularities, the accumulated knowledge about the causes of FLW seems to converge around three central axes for its mitigation, namely collaboration, measurement and communication.

Relationships among the main actors of a food chain must be advantageous for both parties, but this seldom occurs, for instance, in win-lose or non-transparent interactions, characterized by competition between parties (Segrè, Falasconi, Politano, & Vittuari, 2014). Emphasis is usually given to the technical and managerial difficulties of crop planning (e.g. planting time and harvest). In fact, inadequate organization and lack of equipment, good practices, coordination and communication between actors are some of the causes of FLW (HLPE, 2014).

Another point of convergence in literature on the theme is the role of technical innovations, but with one caveat. Although innovations can facilitate FLW reduction, cultural acceptability is crucial for their successful adoption (HLPE, 2014). Goldberg (1996) *apud* Zylbersztajn (1996) underscored those interactions amongst input suppliers, farmers, the processing industry and distribution systems have acquired importance in understanding coordinated systems and forms of governance of agrifood systems. Bhattacharya & Fayezi (2021) indicated that multi-stakeholder collaboration is vital for reducing FLW.

Additionally, the literature seems to converge to the understanding that, to effectively combat FLW, it is necessary to develop and monitor quantification procedures based on the existence of specific and transparent metrics (Kalmykova, Sadagopan, & Rosado, 2018). There are some reports of FLW quantification in the literature. Brancoli, Rousta & Bolton (2017) categorized and quantified food waste in a retail store in Sweden; Cicatiello et al. (2016) quantified food waste and assessed its environmental, social and economic impact in an Italian retail store, and Beretta et al. (2013) quantified food losses in Switzerland in an entire supply chain, with the involvement of 31 organizations at different levels.

Development of FLW quantification methods may allow the monitoring of organizational performance and identification of improvement opportunities. Companies can use the results of the evaluation to establish projects and action plans, based on clear and transparent metrics, to monitor and analyze their performance. Vieira et al. (2021) emphasized the challenge of developing methods that allow an interface between marketing and operations management and that merge methods and units of analysis, including several stakeholders. Dania, Xing & Amer (2018) investigated, through the theory of resource dependence, behavioral factors that may contribute to a collaborative system for the sustainable management of supply chains, including joint efforts, shared activities, shared values, adaptation, trust, commitment, power, continuous improvements, coordination and stability. A recent debate in the discussion of FLW is the consumption of natural resources, such as water and energy (Barbieri, Vasconcelos, Andreassi, & Vasconcelos, 2010); (Barney, 1991); (Cai & Li, 2018); (Fura & Wang, 2017); (Kalmykova, Sadagopan, & Rosado, 2018); (Reid & Miedzinski, 2008).

From this theoretical panorama, it was possible to breakdown the three central axes of FLW mitigation (collaboration, measurement and communication) into eight strategic indicators, namely:

- (1) FLW reduction policies already adopted by the organization;
- (2) process and product innovations;
- (3) partnerships aimed at reducing losses and waste;
- (4) preventive and corrective actions to control and minimize damage to the environment;
- (5) methods of measurement;
- (6) communication;
- (7) use of natural resources – water; and
- (8) use of natural resources – energy.

These indicators were further broken down into variables for the analysis of actions and practices (Figure 1, Stage 2). Supplementary materials describe this analytical construct.

The factors in the scope of policies indicators carried out by the organization regarding FLW and process and product innovations, and optimization of production processes were the most cited from the literature, mainly in the sense of: better management of demands and stocks, controls of overproduction, as well as the use of 4.0 technologies to understand the system, analyze processes and develop product designs, improve food quality control and efficiency production. This finding is in line with research that has been ongoing by the article authors, since the second half of 2023, to deepen the indicators analysis.

4. Proposal of a hierarchy system for good practices in food loss and waste reduction

The use of environmental resources is present in three of the indicators, because according to Gobel et al. (2015) and FAO (2013), food produced for human consumption but not used for this purpose represents a waste of natural raw materials and resources such as land, energy and water, leading to unnecessary CO₂ emissions. FAO, in its Food wastage footprint report (2013), assessed the impact of food waste on natural resources. Environmental assessment of commodities is based on a life-cycle approach that encompasses the entire food cycle, including agricultural production, post-harvest handling and storage, processing, distribution, consumption and end-of-life (i.e. disposal). It should be noted that the ecological relevance of food loss does not solely depend on the quantity but also on the type of food. It is important to consider the lost value of the food product in its production chain and how it is recycled or disposed (Beretta, Stoessel, Baier, & Hellweg, 2013).

Several studies have provided contributions to indicators related to production processes and the supply chain. Parfitt, Barthel & Macnaughton (2010) analyzed FLW in various stages of food production, including primary processing (cleaning, sorting, peeling, grinding, packing, wetting, drying, sieving), secondary processing (mixing, cooking, frying, cutting), product evaluation and quality control (standard recipes and waste/low-quality products) and packaging (weighing, labeling, sealing). According to Lipinsk et al. (2013), processed foods can be lost or wasted due to poor order forecasting and inefficient manufacturing processes. In developing countries, poor storage facilities and lack of infrastructure may also lead to FLW, including in the post-harvest phase, as argued by FAO (2012). Fresh produce, such as fruits, vegetables, meat and fish, can spoil in hot weather when subjected to inadequate storage, transportation, refrigeration and commercialization conditions.

The indicators of actions for combating FLW were classified into two groups with different weights. Indicators 1–5 were attributed weight 3 and indicators 6–8, weight 1 (Figure 1, Stage 3). Sub-indicators may have different values (one or two) based on a two-step evaluation: identification and verification. First, it is analyzed whether the sub-indicator is reported by the organization and whether information about it is clearly associated with FLW reduction actions, or merely referenced. If the sub-indicator is present in the report and clearly d with FLW reduction, it is assigned a value of 2; if the sub-indicator is present but did not clearly refer to FLW reduction, it is assigned a value of 1 (Figure 1, Stage 4). The distinction of scores according to the clarity of the action is important because of the impact that this information has on other stakeholders. Furthermore, a sub-indicator could be measured more than once in the report, depending on the different actions developed by the organization in a given area. Each identification of the sub-indicator was scored, so that the organization obtained higher scores in the same sub-indicator (Ex. the company presented in the report two different campaigns for customer and consumer awareness, this sub-indicator was counted twice).

Initially, the score of each indicator it is calculated by the sum of the respective sub-indicator scores. No ceiling was defined for scores, to enable capturing as many actions as possible for each organization. For example, for the indicator “FLW reduction policies already adopted by the organization,” the final score is the sum of the scores of the eight sub-indicators defined according to their clarity and application. For standardization of indicators and the hierarchy of organizations according to indicator scores, the highest score obtained by an organization for each indicator is determined and used as a base to define the scores of other organizations, as follows:

$$\text{Final score of the } \beta \text{ organization indicator} = \frac{(\text{Indicator score } \beta \text{ organization} \times 100)}{\text{Highest score obtained by an organization in this indicator}}$$

The final score of the organization is estimated by multiplying the eight indicator scores by their respective weights (3 or 1) and dividing the result by 18, which is the sum of weights (5 indicators with weight 3, and 3 indicators with weight 1). The total score of a given organization is calculated as follows:

$$TS = ((I_1 \times 3) + (I_2 \times 3) + (I_3 \times 3) + (I_4 \times 3) + (I_5 \times 3) + (I_6 \times 1) + (I_7 \times 1) + (I_8 \times 1)) / 18$$

$$TS = (\sum (I_n \times W)) / 18$$

where TS is the total mean score of an organization, I is the indicator score and W is the indicator weight.

With this approach, it is possible to evaluate the indicators and positive actions related to FLW reduction in food organizations operating in the processing sector. When determining ranks, there is great interest in measuring how much food has been lost and/or wasted. These assessments are fundamental and have been carried out by the academic community. Equal efforts should be made on evaluating how private policies are designed and implemented to combat FLW. An assessment model is proposed to contribute to the formulation of a positive hierarchy of actions and discussions of ongoing corporate practices to provide insights, from a scientific point of view, into what is known about FLW prevention and combat actions.

It is worth highlighting that since 2022 the proposed model receives dynamism: first, with practical application, based on reading and validating reports from organizations in the Brazilian food sector; and its restructuring, in a more in-depth manner, from the second half of 2023, with the involvement of a Brazilian Foundation (Fundação José Luiz Egydio Setúbal).

5. Managerial implications and final remarks

This section highlights the practical implications of this study, offering valuable insights for food processing organizations seeking to enhance their sustainability efforts, address the challenge of limited public awareness and significantly amplify the positive impact of their FLW reduction policies.

This study aims to develop indicators for assessing private policies addressing FLW. It adopts a bottom-up approach, using a literature review to identify relevant variables and actions. Eight strategic indicators, including FLW reduction policies, process innovations, measurement methods, partnerships, environmental actions, communication and the use of

natural resources (water and energy), were identified. These indicators were further divided into variables for in-depth analysis. The study aims to provide flexible indicators for different food processing organizations, allowing the assessment of their FLW-related actions declared in corporate reports.

According to [Datta & Goyal \(2022\)](#), SDG reports allow companies to plan, implement, measure and communicate their SDG-related initiatives. Some studies indicate that the typology of the report impacts its content and quality, suggesting that disclosures made in sustainability and integrated reports have better quality than those found in annual reports ([Brammer & Pavelin, 2008](#)); ([Cosma, Venturelli, Schwizer, & Boscia, 2020](#)); ([Curtó-Pagès, Ortega-Rivera, Castellón-Durán, & Jané-Llopis, 2021](#)). SDGs have implications for the future of corporate reporting, as their inclusion in corporate information will further increase the quality of financial reporting and become indispensable for companies and organizations that want to create value for their stakeholders in the 21st century. It is also necessary that companies identify SDG targets and incorporate them into their business plan and model ([Bebbington & Unerman, 2018](#)); ([Konstantinos & Dimitrios, 2016](#)). In fact, according to [Schramade \(2017\)](#), companies should define metrics aligned with the most relevant SDGs for their strategies, as this is crucial for their measurement and monitoring. Corporate adoption of targets and key performance indicators related to SDGs is extremely necessary, given that investors require companies to report, in a robust and transparent manner, their progress in meeting SDGs ([Schramade, 2017](#)).

[Mackay et al. \(2022\)](#), in referring to sustainability reports of organizations, stated that many relevant guidelines in the field of sustainability have different focuses and recommend different metrics or indicators. Same situation is observed when it comes to information disclosed by organizations regarding their actions for reducing FLW. It is common for reports from food companies to differ in the diversity, scope and type of information on waste management, which makes it difficult to compare actions.

Food processing organizations should consider adopting private policies specifically targeting FLW reduction. The framework presented in this study offers a structured approach for organizations to develop and implement effective strategies in alignment with their sustainability goals. By effectively implementing the proposed assessment indicators and emphasizing the results of FLW reduction policies, organizations have the opportunity to significantly amplify the positive impact of their initiatives. This can lead to broader social and environmental benefits beyond the organization itself.

The framework can be applied to analyze information declared in corporate reports. By using the assessment indicators, organizations can provide stakeholders with clear and transparent data on their FLW reduction efforts, enhancing accountability and trust.

Given that private policies to reduce FLW are still poorly publicized, organizations should consider more extensive communication efforts to inform the public about their initiatives. This can enhance consumer trust and support while contributing to the broader goal of reducing FLW. In fact, effective communication is essential to engage stakeholders and consumers. Private policies related to FLW reduction can be a selling point for organizations, enhancing their brand value and reputation. Clear and transparent communication about these policies and their outcomes is crucial.

As explained in section four of this article, actions within the scope of the indicators discussed here have already been visualized from reports of the largest food companies operating in Brazil [3], which configures their application in the Market *locus* ([Figure 1, Stage 5](#)). The application of the model occurs from the companies reports. Many

multinationals operate concurrently in countries with different levels of development and approaches about FLW. Depending on the level of information available in the reports, it would be possible to verify if there is a relationship between the way the organization operates in FLW and the level of development of the country in which the organization operates. The adoption of FLW prevention actions by the organization is wouldn't necessarily uniform in all markets in which operates; however it would be possible to apply the model indistinctly of the country in which the organization operates.

The possibility of making this analysis and communication structure broad of the companies now depends on steps such as: deepening the understanding of sub-indicators (already carried out), validation using the Delphi method (in progress) and the strategy of dissemination of results.

The assessment model introduced in this study supports a continuous improvement approach. Organizations can periodically reevaluate their FLW reduction policies and actions, using the indicators to adapt and enhance their strategies as necessary. Companies can use the framework to benchmark themselves versus industry peers and best practices. By doing so, they can identify where they stand in comparison to others and set realistic targets for FLW reduction.

Indicators have multiple applications. They are used by stakeholders to monitor the actions of organizations by checking that the reports disclose the actions in a continuous manner (several years). They can also be used to evaluate actions comparatively between two organizations or the organization over time (several years).

The index provides a robust framework to analyze corporate sustainability strategies, fostering academic discussions on private sector contributions to FLW reduction. For companies, it serves as a self-assessment tool, enabling them to benchmark efforts and identify areas for improvement. Additionally, the index facilitates stakeholder discussions on the effectiveness and accountability of corporate policies in this area.

In conclusion, the managerial implications underscore the importance of proactive and strategic engagement with FLW reduction policies. This not only aligns with sustainability goals, but also has the potential to enhance efficiency, foster collaborations, improve brand reputation in an increasingly conscientious market, provide stakeholders with valuable insights through corporate reporting, address the current challenge of limited public awareness and significantly amplify the positive impact of FLW reduction initiatives.

Notes

1. Food loss has been part of the scope of FAO guidelines since its creation in 1945 (Parfitt et al., 2010).
2. A study of the Asia-Pacific region.
3. The study can be observed in <https://all4food.com.br/ranking/>

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Supplementary material

The supplementary material for this article can be found online.

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