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## LEVERAGING TECHNOLOGY TO COMBAT FOOD WASTE AND HUNGER: A CASE STUDY OF THE FEED ME TOO PROJECT

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### ABSTRACT

*The Feed Me Too Android application offers an innovative solution to address global food waste, hunger, and malnutrition challenges. In a world where approximately 821 million individuals suffer from hunger and one in three faces malnutrition, the need to combat food scarcity is urgent (FAO, 2022). Shockingly, a UN report from 2021 reveals that 30% of the global population grapples with extreme food shortages (FAO, 2022). Equally staggering is the fact that one-third of all food produced, equivalent to 1.3 billion tons, is wasted annually, costing the global economy approximately \$940 billion (WFP, 2020). Feed Me Too represents a paradigm shift, functioning as a comprehensive waste food management and donation system. It empowers donors, including individuals, restaurants, and hotels, to efficiently notify potential receivers about surplus food. Simultaneously, it enables receivers, often NGOs and agents, to request or collect excess food, bridging the gap between waste and scarcity. This application embodies transformative ethos, reducing food waste and redistributing nourishment to the needy. It is more than technology; it is a testament to human compassion and environmental responsibility. This research explores Feed Me Too's mechanics, impact, and potential as a symbol of change in the fight against food waste and*

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*global hunger. It represents a future where sustainability prevails, food waste dwindles, and no one goes to bed hungry.*

**Keywords:** *Food Waste Reduction, Hunger Alleviation, Food Redistribution, Android Application, Sustainability.*

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## 1. INTRODUCTION

In this research, we address the global challenges of food waste and hunger, exemplified by disconcerting statistics: approximately one-third of all globally produced food, equivalent to 1.3 billion tons, is lost or wasted annually (WFP, 2020), while about 821 million individuals, or one in nine people, suffer from hunger (FAO, UN Report: Global hunger numbers rose to as many as 828 million in 2021, 2022). This stark contrast highlights the urgent need to bridge the gap between food surplus and scarcity. The Feed Me Too Android application emerges as a beacon of hope and a catalyst for transformative change, not just as a technological innovation but as a visionary response to an urgent humanitarian challenge (Ramalingam & Bound, 2016).

Our primary research objective is to explore the Feed Me Too application's potential in addressing global food waste and hunger challenges. We will examine its mechanics and features, focusing on its role in waste food management and equitable surplus food redistribution. Additionally, we will assess its impact on reducing food waste and hunger while promoting community engagement. We will also analyze the application's contribution to sustainability, aligning with a 2013

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FAO report that highlights the environmental harm caused by food waste (FAO, Food waste harms climate, water, land and biodiversity – new FAO report, 2013).

Furthermore, we will scrutinize the practical application of the Feed Me Too application by stakeholders, including donors, receivers, and non-governmental organizations (NGOs) engaged in food redistribution, capturing their experiences and challenges in utilizing this innovative tool. Finally, we will explore the potential for scaling and replicating the Feed Me Too model in regions facing similar food waste and hunger challenges.

This research aims to reveal the transformative potential of the Feed Me Too Android application, gaining a profound understanding of how technology can reshape the narrative surrounding food security. The Feed Me Too application symbolizes a beacon of positive change—a future where food waste is minimized, hunger is curtailed, and sustainability is prioritized, aligning with the United Nations' Sustainable Development Goal 2 to "end hunger, achieve food security and improved nutrition, and promote sustainable agriculture" (UN, 2016).

## **2. REVIEW OF LITERATURE**

The Feed Me Too application's mission to bridge the gap between food waste and hunger resonates deeply with the global challenges of our time. This literature review aims to provide a comprehensive understanding of the issues surrounding food waste, hunger, and technology-driven solutions like Feed Me Too. It sets the stage for a detailed

exploration of the application's mechanics, impact, and potential.

## 2.1 Food Waste: Causes and Consequences

Food waste is a complex issue influenced by various factors across the food supply chain. It occurs at multiple stages, including production, distribution, retail, and consumption. Some of the primary causes of food waste include overproduction, strict cosmetic standards, inefficient storage, and consumer behaviors (HLPE, 2014). Food waste imposes significant economic, environmental, and social consequences.

- **Economic Impact:** The economic cost of food waste is substantial. Globally, it amounts to approximately \$940 billion annually (WFP, 2020). This wastage represents a direct loss to producers, retailers, and consumers.
- **Environmental Impact:** Food waste contributes to environmental degradation. It is responsible for approximately 8% of global greenhouse gas emissions (FAO, Food waste harms climate, water, land and biodiversity – new FAO report, 2013). Moreover, the resources used in food production, including water and land, are squandered when food is discarded.
- **Social Impact:** While millions suffer from hunger and malnutrition, large quantities of food are wasted daily. This stark contrast underscores the social injustice inherent in food waste. Food waste also depletes resources that could otherwise be used to combat hunger (Buzby, Wells, & Hyman, 2014).

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## 2.2 Global Hunger and Malnutrition

Hunger and malnutrition persist as formidable global challenges. The United Nations' Sustainable Development Goal 2 seeks to "end hunger, achieve food security and improved nutrition, and promote sustainable agriculture" by 2030 (UN, 2016). However, progress toward this goal remains slow.

- **Hunger Statistics:** Approximately 821 million people, or one in nine, suffer from hunger globally (FAO, UN Report: Global hunger numbers rose to as many as 828 million in 2021, 2022). Malnutrition, in its various forms, affects one in three people, posing long-term health risks.
- **Food Insecurity:** Food insecurity is a multifaceted issue, characterized by a lack of consistent access to adequate and nutritious food. It often results from poverty, social inequalities, and inadequate food distribution systems (Hossain, 2017).

## 2.3 Technology-Driven Solutions: Role and Potential

Technology-driven solutions have emerged as powerful tools to address food waste and hunger. Mobile applications like Feed Me Too have the potential to reshape the way we manage and redistribute surplus food resources.

- **Mobile Applications for Food Redistribution:** Several mobile applications worldwide connect donors with surplus food to individuals or organizations in need. Examples include Too Good To Go, OLIO, and of

course, Feed Me Too. These apps provide platforms for seamless communication and coordination.

- **Efficiency and Accessibility:** Technology-driven solutions enhance the efficiency of food redistribution. They enable donors to instantly notify prospective receivers about surplus food, reducing wastage and ensuring that excess food reaches those in need (Link, 2019).
- **Sustainability:** By optimizing food use and distribution, technology-driven solutions contribute to sustainability. They reduce the environmental footprint of food waste and promote responsible consumption (Szczyzny, 2023).
- **Community Engagement:** Mobile applications foster community engagement by connecting donors, receivers, and volunteers. They encourage collective efforts to combat food waste and hunger at the grassroots level.

## 2.4 Feed Me Too: A Beacon of Hope

The Feed Me Too Android application emerges as a beacon of hope within this context. By functioning as a waste food management and donation system, it addresses the global paradox of food waste coexisting with hunger. Feed Me Too empowers donors to prevent food wastage by notifying prospective receivers about surplus food resources. Conversely, receivers, often represented by NGOs and their agents, can raise requests for food or directly collect excess food from donors, ensuring its equitable redistribution to those in need.

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- **Impact on Food Waste:** Feed Me Too plays a pivotal role in reducing food waste by connecting surplus food with those facing hunger. By preventing food from ending up in landfills, it minimizes the environmental and economic costs of waste.
  - **Impact on Hunger Alleviation:** Through real-time communication and efficient food distribution, Feed Me Too contributes to hunger alleviation. It empowers NGOs and their agents to reach vulnerable communities with much-needed nourishment.
  - **Impact on Sustainability:** The application promotes sustainability by optimizing resource utilization. It aligns with global efforts to reduce greenhouse gas emissions, conserve water, and promote responsible food consumption (UNEP, 2020).
  - **Community Engagement:** Feed Me Too fosters community engagement through its platform. Donors, receivers, and NGOs actively participate in addressing food waste and hunger at the grassroots level.

## 2.5 Theoretical Framework

This literature review draws on several theoretical frameworks, including:

- **Food Waste Behavior Theory:** Understanding the psychological factors that contribute to food waste at the consumer level (Russell, Young, Unsworth, & Robinson, 2017).

- **Diffusion of Innovation Theory:** Examining the adoption and spread of technology-driven solutions like Feed Me Too (Rogers, 2003).
- **Collaborative Framework for Food Systems Transformation - A multi-stakeholder pathway for sustainable food systems:** Analyzing the environmental and social dimensions of food waste and technology-driven interventions (Bortoletti & Lomax, 2019).

The literature reviewed here highlights the urgency of addressing food waste, hunger, and malnutrition on a global scale. It underscores the pivotal role of technology-driven solutions, such as the Feed Me Too application, in mitigating these challenges. As we delve deeper into the mechanics and impact of Feed Me Too, we gain a richer understanding of its potential to reshape the narrative surrounding food security and sustainability. The subsequent sections of this research paper will explore the application in detail, offering insights into its functionality, impact, and potential for scalability and replication.

### 3. RESEARCH METHODOLOGY

The methodology section outlines the research approach and methods employed to investigate the Feed Me Too Android application's mechanics, impact, and potential in addressing food waste and hunger. This section provides a detailed description of data collection methods, participant selection, and data analysis techniques.



### 3.1 Research Design

This research adopts a mixed-methods research design, which combines both quantitative and qualitative research approaches. This approach is chosen to gain a comprehensive understanding of the Feed Me Too application's functionality, impact, and user experiences. The research design encompasses the following components:

- **Quantitative Component:** Quantitative data was collected through structured surveys and app usage data analysis. Surveys were administered to a sample of Feed Me Too users, including donors, receivers, and administrators. The quantitative analysis provided statistical insights into user demographics, app usage patterns, and the impact of the application.
- **Qualitative Component:** Qualitative data was collected through semi-structured interviews with key stakeholders, including donors, receivers, and non-governmental organization (NGO) representatives involved in food redistribution. Qualitative data was also derived from open-ended survey responses. The qualitative analysis will offer deeper insights into user experiences, challenges, and the broader implications of Feed Me Too.

### 3.2 Data Collection Methods

- **Surveys:** Structured surveys were designed to collect quantitative data from Feed Me Too users. The surveys covered a range of topics, including user demographics, frequency of app usage, types of food donated, and

user satisfaction. The surveys were administered electronically through the Feed Me Too application itself to reach a broad user base.

- **Interviews:** Semi-structured interviews were conducted with a purposive sample of Feed Me Too users, including donors, receivers, and NGO representatives. The interviews were designed to elicit in-depth insights into their experiences with the application. Interview questions explored topics such as motivations for using the app, challenges encountered, and perceived impacts on food waste and hunger alleviation.
- **App Usage Data Analysis:** Data regarding app usage patterns was collected and analyzed. This data included information on the frequency of food donations, the types of food items donated, and the locations of donors and receivers. App usage data was anonymized and aggregated to maintain user privacy.

### 3.3 Participant Selection

Participants for this research were selected through a combination of convenience and purposive sampling methods:

- **Convenience Sampling:** Users of the Feed Me Too application who voluntarily participated in the surveys were included in the study. Convenience sampling allowed for a broad representation of the user base.
- **Purposive Sampling:** Key stakeholders, such as donors, receivers, and NGO representatives, will be purposefully selected for interviews to ensure diverse

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perspectives and a comprehensive understanding of the application's impact.

### 3.4 Data Analysis

- **Quantitative Data Analysis:** Quantitative data collected through surveys and app usage were analyzed using statistical software. Descriptive statistics, such as frequencies, percentages, and means, were calculated to summarize user demographics, usage patterns, and satisfaction levels.
- **Qualitative Data Analysis:** Qualitative data from interviews and open-ended survey responses were subjected to thematic content analysis. Transcripts and textual data were coded, categorized, and analyzed to identify recurring themes and patterns. Qualitative data analysis software aided in managing and organizing qualitative data.

### 3.5 Ethical Considerations

Ethical considerations are paramount in this research. The following ethical principles were adhered to:

- **Informed Consent:** Participants were provided with clear information about the research purpose and their voluntary participation. Informed consent was obtained before data collection.
- **Anonymity and Confidentiality:** All data collected was treated with the utmost confidentiality. Participants' identities were anonymized, and data was stored securely.

- Data Privacy: User data collected through the Feed Me Too application was used solely for research purposes and was not shared with third parties.
- Respect for Participants: Researchers respected the rights, values, and perspectives of participants, ensuring a respectful and non-biased approach during interviews and surveys.

#### 4. DISCUSSION

The results section presents the findings of the research conducted on the Feed Me Too Android application. This section provides a comprehensive overview of the data collected through surveys, interviews, and app usage analysis. The results are organized based on the research objectives and questions outlined in the methodology.

##### 4.1 User Demographics

- **Objective 1:** To examine the mechanics and features of the Feed Me Too application, including user demographics.
- **Research Question 1:** How does the Feed Me Too application function as a waste food management and donation system, and what are its key features?

##### Findings:

- **User Base:** The user base of Feed Me Too consists of a diverse group, including individuals, restaurants, hotels, and non-governmental organizations (NGOs).

- **Donor Profiles:** Donors include restaurants and hotels looking to redistribute surplus food, as well as individuals who occasionally donate excess food from their homes.
- **Receiver Profiles:** Receivers primarily consist of NGOs and their agents, who collect and redistribute food to those in need.

#### 4.2 Impact on Food Waste and Hunger

- **Objective 2:** To assess the impact of the Feed Me Too application in reducing food waste and alleviating hunger.
- **Research Question 2:** What is the impact of the Feed Me Too application in reducing food waste and alleviating hunger, particularly in the context of the beneficiaries it serves?

#### Findings:

- **Reduction in Food Waste:** Survey responses indicate that 82.4% of donors reported a reduction in food waste since using the application. Restaurants and hotels, in particular, noted a significant decrease in food wastage.

Table 1. Donor or Receiver

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Donor	17	100.0	100.0	100.0

Table 2. App's Positive or Negative Impact in Reducing Food Waste

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Negative	2	11.8	11.8	11.8
	Positive	14	82.4	82.4	94.1
	Undecided	1	5.9	5.9	100.0
	Total	17	100.0	100.0	

- Alleviation of Hunger:** Interviews with receivers highlighted the application's role in ensuring a consistent supply of food resources for distribution. 91.3% of the surveyed receivers reported that Feed Me Too had a positive impact on their ability to provide food to those in need.

Table 3. Donor or Receiver

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Receiver	23	100.0	100.0	100.0

Table 4. App's Positive or Negative Impact in Alleviating Hunger

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Negative	1	4.3	4.3	4.3
	Positive	21	91.3	91.3	95.7
	Undecided	1	4.3	4.3	100.0
	Total	23	100.0	100.0	

- **Impact on Donors:** Donors expressed satisfaction in knowing that their surplus food was being put to good use. 82.4% of donors reported a sense of fulfillment in contributing to hunger alleviation.

Table 5. Donor or Receiver

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Donor	17	42.5	42.5	42.5
	Receiver	23	57.5	57.5	100.0
	Total	40	100.0	100.0	

Table 6. App Satisfaction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dissatisfied	2	5.0	11.8	11.8
	Neutral	1	2.5	5.9	17.6
	Satisfied	12	30.0	70.6	88.2
	Very satisfied	2	5.0	11.8	100.0
	Total	17	42.5	100.0	
Missing	System	23	57.5		
Total		40	100.0		

### 4.3 Sustainability and Environmental Impact

- **Objective 3:** To analyze the environmental implications of food waste and the role of technology-driven solutions like Feed Me Too in promoting sustainability.

- **Research Question 3:** What are the environmental implications of food waste, and how does the Feed Me Too application contribute to sustainability?

**Findings:**

- **Environmental Awareness:** Survey data showed that 67.5% of users, including both donors and receivers, reported increased environmental awareness since using the application. Users appreciated the role Feed Me Too played in reducing greenhouse gas emissions associated with food waste.

Table 7. Changes in Environmental Awareness or Sustainability Practices Among Users

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	10	25.0	25.0	25.0
	Yes	27	67.5	67.5	92.5
	Undecided	3	7.5	7.5	100.0
	Total	40	100.0	100.0	

- **Resource Conservation:** 77.5 % of surveyed users believed that the application contributed to resource conservation, particularly water and land use efficiency.



Table 8. App's Positive or Negative Impact in Contributing to Resource Conservation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Negative	7	17.1	17.5	17.5
	Positive	31	75.6	77.5	95.0
	Undecided	2	4.9	5.0	100.0
	Total	40	97.6	100.0	
Missing	System	1	2.4		
Total		41	100.0		

#### 4.4 Practical Application by Users

- **Objective 4:** To investigate the practical application of the Feed Me Too application by donors, receivers, and non-governmental organizations (NGOs) in the context of food redistribution.
- **Research Question 4:** How do donors, receivers, and NGOs practically utilize the Feed Me Too application in the process of food redistribution, and what are their experiences and challenges?

#### Findings:

- **Donor Experience:** Donors found the application easy to use and appreciated the real-time notification system. However, some donors mentioned logistical challenges, such as coordinating food pickups.

- **Receiver Experience:** NGOs valued the convenience of the application for food collection. They cited improved logistics and increased efficiency in food distribution.
- **Challenges:** Donors and receivers both reported occasional challenges related to app notifications, connectivity issues, and the need for better coordination.

#### 4.5 Scalability and Replication Potential

- **Objective 5:** To consider the potential for scalability and replication of the Feed Me Too model in other regions and communities facing similar challenges.
- **Research Question 5:** What potential exists for scaling and replicating the Feed Me Too model in different geographic regions and communities facing similar food waste and hunger challenges?

#### Findings:

- **Scalability:** Survey responses from users indicated a willingness to support the expansion of Feed Me Too to other regions. 85% of respondents believed that the model could be scaled effectively.

Table 9. Users Supporting the Expansion of the Feed Me Too App

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Negative	5	12.2	12.5	12.5
	Positive	34	82.9	85.0	97.5
	Undecided	1	2.4	2.5	100.0
	Total	40	97.6	100.0	

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Missing System	1	2.4		
Total	41	100.0		

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- **Replication Potential:** NGOs and donors emphasized the need for customization to address specific local needs and regulations in new regions. They suggested that the core concept of the application could be replicated with appropriate adaptations.

The results of this research highlight the positive impact of the Feed Me Too Android application in reducing food waste, alleviating hunger, and promoting environmental sustainability. Users, including donors and receivers, reported significant benefits from the application's functionalities. While challenges exist, there is a clear willingness among users to support the expansion of the Feed Me Too model to other regions and communities facing similar challenges. The subsequent section of this research paper will provide a detailed discussion of these findings and their implications.

## 5. DISCUSSION

The discussion section interprets and contextualizes the research findings from the Feed Me Too Android application study. It explores the implications of these findings in the broader context of addressing food waste, hunger, and sustainability. The discussion is organized around the key research objectives and questions outlined in the methodology.

### 5.1 User Demographics and Application Functionality

The diverse user base of Feed Me Too, including individuals, restaurants, hotels, and NGOs, underscores the application's adaptability and broad appeal. The application's functionality as a waste food management and donation system is aligned with its mission to bridge the gap between surplus food resources and those in need. Donors, both commercial and individual, have found a platform to connect with receivers efficiently. Similarly, receivers, primarily represented by NGOs, have a user-friendly tool to raise requests for food or directly collect excess food from donors. The effectiveness of the application in facilitating these connections has been a key factor in its success.

### 5.2 Impact on Food Waste and Hunger Alleviation

The research findings strongly support the assertion that Feed Me Too has a positive impact on reducing food waste and alleviating hunger:

- **Reduction in Food Waste:** A significant percentage of donors reported a decrease in food wastage since using the application. This reduction is particularly notable among restaurants and hotels, which often deal with larger quantities of surplus food. The real-time notification system of the application allows donors to respond quickly to potential food waste situations.
- **Alleviation of Hunger:** The application's positive impact on NGOs' ability to provide food to those in need is evident. The consistent supply of food resources

facilitated by Feed Me Too has strengthened the food redistribution efforts of these organizations. Users also reported a sense of fulfillment in contributing to hunger alleviation, reinforcing the application's social impact.

### 5.3 Sustainability and Environmental Impact

Feed Me Too has raised environmental awareness among its users and is seen as contributing to sustainability:

- **Environmental Awareness:** A significant portion of users expressed increased environmental awareness since using the application. This suggests that the application not only addresses immediate hunger but also aligns with broader sustainability goals. Users appreciate the role Feed Me Too plays in reducing greenhouse gas emissions and conserving resources associated with food waste.
- **Resource Conservation:** The research findings indicate that users believe the application contributes to resource conservation, particularly in terms of water and land use efficiency. By optimizing food distribution, Feed Me Too helps reduce the environmental footprint associated with food production and waste.

### 5.4 Practical Application and Challenges

Users' practical experiences with Feed Me Too reveal the application's strengths and areas for improvement:

- **Donor Experience:** Donors find the application easy to use and value the real-time notification system.

However, some donors reported logistical challenges, such as coordinating food pickups. Addressing these challenges could further enhance the donor experience.

- **Receiver Experience:** NGOs appreciate the convenience of the application for food collection, which has improved logistics and efficiency. Nevertheless, occasional challenges related to app notifications and connectivity need to be addressed to ensure a seamless experience.

### 5.5 Scalability and Replication Potential

The willingness of users to support the expansion of Feed Me Too to other regions highlights its scalability and replication potential:

- **Scalability:** Users expressed enthusiasm for expanding the application to new regions, underscoring its scalability. The application's adaptability to different contexts and its ability to connect donors and receivers can make it an effective tool in addressing food waste and hunger on a broader scale.
- **Replication Potential:** To replicate the Feed Me Too model in different regions, customization is key. Adapting the application to specific local needs, regulations, and cultural contexts will be essential for successful replication. The core concept of connecting surplus food with those in need remains replicable with appropriate adaptations.

## **6. CONCLUSION AND IMPLICATIONS**

The Feed Me Too Android application represents a promising solution in the fight against food waste, hunger, and environmental degradation. The positive impact it has demonstrated, particularly in reducing food waste and alleviating hunger, highlights its potential as a tool for positive social and environmental change. To maximize its impact and reach, addressing user-reported challenges and ensuring the application's adaptability for different regions are essential steps.

Moreover, the success of Feed Me Too underscores the broader potential of technology-driven solutions in addressing global challenges. As society grapples with issues like food waste, hunger, and sustainability, applications like Feed Me Too exemplify how technology can facilitate efficient, sustainable, and socially responsible solutions. The model of connecting surplus resources with those in need can serve as a blueprint for future innovations in the humanitarian and sustainability sectors.

In conclusion, the Feed Me Too Android application is not only a waste food management and donation system but also a symbol of hope. Its impact on reducing food waste and alleviating hunger, combined with its potential for scalability and replication, positions it as a powerful tool in creating a more equitable, sustainable, and hunger-free world.

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## REFERENCES

- Aktas, E., Sahin, H., Topaloglu, Z., Oledinma, A., Huda, A. K., Irani, Z., . . . Kamrava, M. (2018). A consumer behavioral approach. *Journal of Enterprise Information Management*, 31(5), 658-673. doi:10.1108/JEIM-03-2018-0051
- Bortoletti, M., & Lomax, J. (2019). *Collaborative Framework for Food Systems Transformation*. Bern: United Nations Environment Program (UNEP).
- Buzby, J. C., Wells, H. F., & Hyman, J. (2014). *The Estimated Amount, Value, and Calories of Postharvest Food Losses at the Retail and Consumer Levels in the United States*. U.S. Department of Agriculture. Washington: Economic Research Service. Retrieved from <http://www.ers.usda.gov/publications/eib-economic-information-bulletin/eib-xxx.aspx>
- Cheatham, A., & Klobucista, C. (2020, September 21). *Rising Hunger: Facing a Food-Insecure World*. Retrieved from Council on Foreign Relations: <https://www.cfr.org/article/rising-hunger-facing-food-insecure-world>
- Evans, D. (2014). *Food Waste: Home Consumption, Material Culture and Everyday Life*. London: Bloomsbury Publishing.
- FAO. (2013, September 11). *Food waste harms climate, water, land and biodiversity - new FAO report*. Retrieved from Food and Agriculture Organization of the United Nations:



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<https://www.fao.org/news/story/en/item/196220/icode/>

FAO. (2022, July 6). *UN Report: Global hunger numbers rose to as many as 828 million in 2021*. Retrieved from Food and Agriculture Organization of the United Nations: <https://www.fao.org/newsroom/detail/un-report-global-hunger-SOFI-2022-FAO/en>

Grebmer, K. v., Bernstein, J., Wiemers, M., Schiffer, T., Hanano, A., Towey, O., . . . Fritschel, H. (2021). *Global Hunger Index: Hunger and Food Systems in Conflict Settings*. Stockholm: Peer-Reviewed.

HLPE. (2014). *Food losses and waste in the context of sustainable food systems*. Rome: Committee on World Food Security.

Hossain, N. (2017, October). *Inequality, Hunger, and Malnutrition: Power Matters*. Retrieved from Global Hunger Index: <https://www.globalhungerindex.org/issues-in-focus/2017.html>

Link, A. (2019, June 26). *Food and Tech: Solutions to Recover and Redistribute Food Waste*. Retrieved from NYC Food Policy Center: <https://www.nycfoodpolicy.org/food-and-tech-solutions-to-recover-redistribute-food-waste/>

Ramalingam, B., & Bound, K. (2016). *Innovation for International Development: Navigating the Paths and Pitfalls*. London: Nesta.

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Rogers, E. M. (2003). *Diffusion of innovation* (5th ed.). New York: Free Press.

Russell, S. V., Young, C. W., Unsworth, K. L., & Robinson, C. (2017). Bringing habits and emotions into food waste behavior. *Resources, Conservation & Recycling*, 107-114. Retrieved from <http://www.elsevier.com/locate/resconrec>

Szczesny, M. (2023, September 12). *Viewpoint: How can technology help in food waste reduction?* Retrieved from Food Management: <https://www.food-management.com/healthcare/viewpoint-how-can-technology-help-food-waste-reduction#:~:text=In%20addition%20to%20the%20intelligent,predict%20food%20demand%20more%20accurately>.

UN. (2016). *Goal 2: Zero Hunger*. Retrieved from United Nations Statistics Division: <https://unstats.un.org/sdgs/report/2016/goal-02/>

UNEP. (2020). *Annual Report 2020*. Osaka: Government of Japan.

WFP. (2020, June 2). *5 facts about food waste and hunger*. Retrieved from World Food Program: <https://www.wfp.org/stories/5-facts-about-food-waste-and-hunger>.