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## **From Waste to Relief: Unlocking the Potential for Food Rescue in Low- and Middle-Income Countries**

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### **Abstract**

Food rescue has emerged as a promising approach to address the interrelated issues of food insecurity and food waste. According to the food waste hierarchy, the next best strategy after food waste prevention is to donate surplus food for human consumption. However, while some countries have well-established networks of charities and government support to promote surplus food donation and food rescue in most developing countries is often less structured and smaller in scale. To gain insights into the current landscape of food rescue, this study thoroughly examined existing food rescue operations and systems, mainly from the UK, Singapore, Malaysia, India, and the Philippines. The study also analysed several countries' food rescue policy environments to understand how an enabling environment can be created. A particular focus was set on food safety being a critical consideration when rescuing and donating surplus food. Simplified food safety guidelines, staff training, and adequate storage and transportation facilities are crucial to food safety. Effective partnerships between food rescue organizations, food businesses, government agencies, and other stakeholders are also critical to the success of food rescue efforts. The study found a need to develop such partnerships in developing countries, where they may be less established than in the Global North. To facilitate the development of an enabling environment for food rescue in low- and middle-income countries (LMICs), the study developed a set of templates, including relevant food safety guidelines, partnership contracts, and policy templates. These resources can serve as valuable tools for stakeholders in LMICs to promote and enhance food rescue efforts that can help address food insecurity and reduce food waste.

**Keywords:** food rescue, surplus food donation, circular economy, food waste, food security, food waste prevention, partnerships, waste reduction, food waste redistribution

### **Introduction**

Food rescue is the practice of salvaging and redistributing edible food that would otherwise go to waste. It involves collecting surplus food from various sources, such as restaurants, supermarkets, and events, and redistributing it to people who are in need. Food rescue is an important way to address both food waste and food insecurity. Worldwide, about one-third of all food produced, about 1.3 billion tons per year, is estimated to go to waste while millions of people struggle with hunger and food insecurity (FAO, 2011). Food rescue is on the second highest tier of the food waste recovery hierarchy and is a powerful way to reduce waste, fight hunger, and promote sustainability (Senanayake et al., 2021). Some food rescue organizations work directly with producers, retailers, hotels, and restaurants to collect and distribute surplus food. In contrast,

others focus on educating the public about the issue of food waste and encouraging individuals to reduce their food waste.

### Material and Methods

This research employed a robust methodology encompassing literature review, information analysis, and recommendation development. Initially, a comprehensive literature review was conducted, encompassing academic sources and grey literature, focusing on existing food rescue organizations and their activities. The analysis of the literature served as a foundation for understanding best practices and challenges in food rescue efforts. A cross-country assessment was conducted to (i) identify critical success factors for an enabling environment that addresses the obstacles to donating surplus food and (ii) to understand key differences in the food rescue system governance and regulatory framework in different countries. To understand approaches to address these challenges, surplus food safety regulations of the UK, India, Philippines, Malaysia, and Singapore were assessed in more detail. The study aimed to develop recommendations for promoting food rescue in low- and middle-income countries, including relevant food safety guidelines, partnership contracts, and policy templates.

### Results and Discussion

#### The Food Rescue System

A food rescue system refers to a coordinated and organized network of activities, processes, and stakeholders aimed at recovering edible surplus food that would otherwise go to waste and redistributing it to individuals and communities in need. The primary goal of food rescue is to prevent food waste and address food insecurity simultaneously by rescuing and redirecting surplus food to those who can benefit from it. Figure 1 illustrates the food rescue system with its stages and key stakeholders.

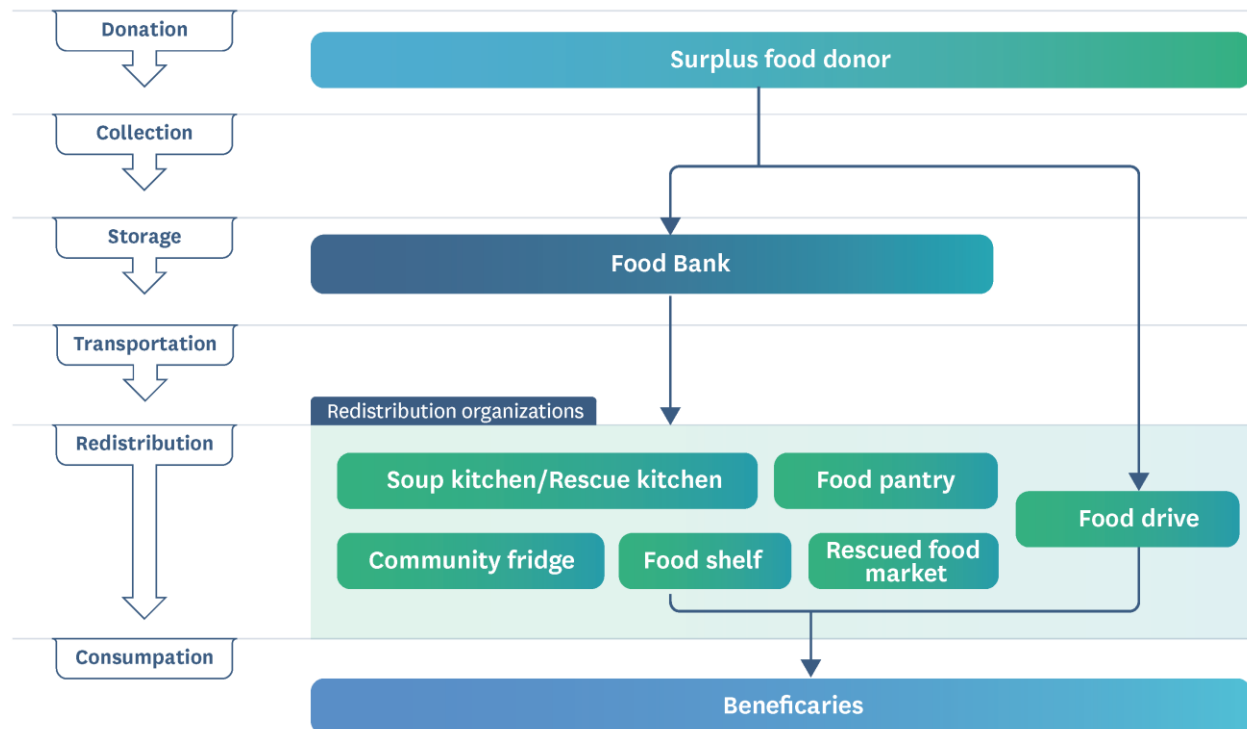


Figure 1: Food rescue system with its stages and key stakeholders

#### Challenges

Critical challenges associated with promoting food rescue are linked to (i) regulations, (ii) logistic complexity and infrastructure gaps, (iii) food safety concerns, (iv) awareness gains and cultural barriers, (v) limited funding and resources, and (vi) inadequate partnerships (Patel et al. 2021; Walters et al. 2021; Chen & Chen 2018; Franco & Cicatiello 2021; Kobayashi et al. 2018;

Baglioni et al. 2017; Bierma et al., 2019; GFN, 2018). Overcoming these challenges requires multifaceted strategies considering regulatory, economic, logistical, and cultural aspects.

**Policies and regulations promoting food rescue**

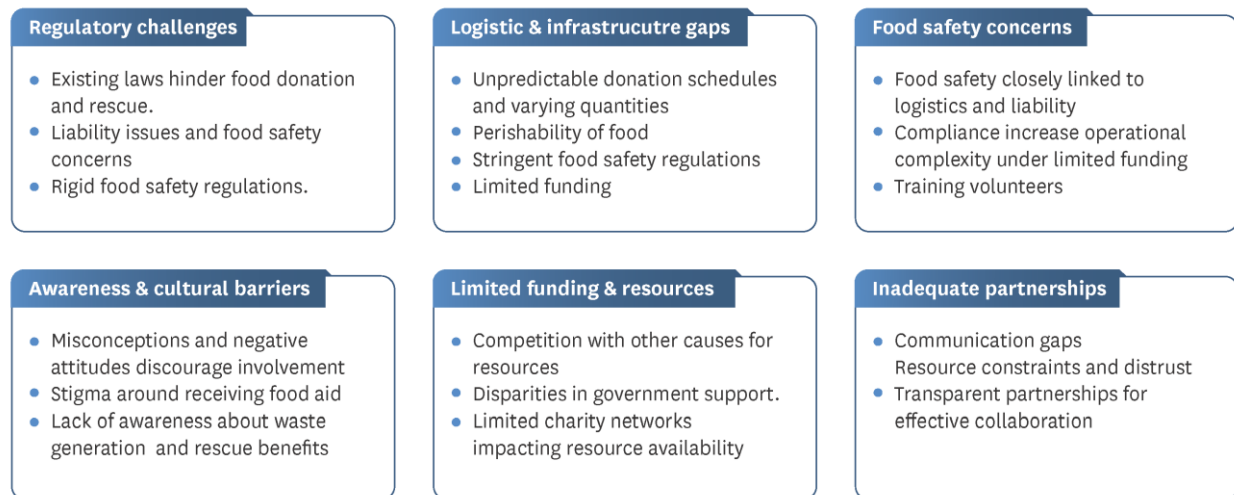
A range of policies and regulations can advance food rescue efforts by targeting food waste reduction or promoting an enabling environment for surplus food donation (Table 1).

**Table 1: Policies and regulations promoting food rescue (adapted from Authors, Senanayake 2021; FLPC & The GFN Network 2023)**

Food waste reduction	Surplus food donation
<ul style="list-style-type: none"> <li>- National Law or policy on food waste</li> <li>- Setting food waste reduction targets and monitor progress</li> <li>- Encourage businesses to report food waste</li> <li>- Landfill ban for food waste</li> <li>- Food waste tax</li> <li>- Subsidies or grants for research on food waste</li> </ul>	<ul style="list-style-type: none"> <li>- Liability protection for food donors</li> <li>- Improved date labelling</li> <li>- Food safety guidelines for surplus food donation</li> <li>- Tax incentives for surplus food donation</li> <li>- Eliminate tax barriers to donation</li> <li>- Establish food rescue networks and partnerships</li> <li>- Government grants and incentives</li> </ul>

**Surplus food safety regulations**

Food safety is a critical concern during food rescue and redistribution that regulations and guidelines must address. Figure 2 shows which surplus food safety issues are regulated in the UK, India, Singapore, Philippines, and India.



**Figure 2: Existing surplus food safety regulation in selected countries along the food rescue value chain (based on FLPC and GFN 2023; Baglioni et al. 2017; GFN 2018; Government of Malaysia 2020; Republic of the Philippines 2009; Food Safety and Standards Authority of India 2019)**

**Recommendations**

*Food safety guidelines for LMICs*

A set of minimum food safety guidelines for surplus food donation and rescue is suggested, assigning specific responsibilities to the key parties involved (Table 2). These guidelines are essential to guarantee the safety and quality of donated food, thereby safeguarding the health of beneficiaries and upholding public health standards.

*Partnership contracts*

The mapping of stakeholders and their responsibilities shed light on key partnership arrangements required to promote food rescue. The following contracts and agreements are suggested as a set of minimum arrangements for a successful food rescue stakeholder coordination:

- ✓ **Confidentiality agreement** between surplus food donors and food bank or food redistribution organization: To protect donor privacy and encourage donations.
- ✓ **Surplus food supplying and receiving checklists:** Include food items that can be donated or not depending on the organization's capacity and infrastructure.
- ✓ **Partnership contract between food bank and food redistribution organization:** Clarifies roles and responsibilities to ensure that food is distributed in a fair and efficient manner.
- ✓ **Food safety guidelines for food banks:** Ensure safe handling, storage, and distribution of surplus food in food banks to prevent contamination and protect recipients' health.
- ✓ **Surplus food safety handling and transportation guidelines:** Provides general safety instructions for surplus food handling and transportation in all food rescue organizations.

**Table 2: Minimum surplus food safety guidelines with responsibilities**

Food safety issue	Surplus food donor	Food bank	Surplus food redistributor	Beneficiary
Food hygiene	✓	✓	✓	
Segregation in perishable & non-perishable food	✓			
Proper packaging	✓			
Labelling for non-labeled and perishable food		✓	✓	
Storage conditions incl. refrigeration, if required		✓	✓	
Clean transport vehicle		✓	✓	
Labelling of content, if required			✓	
Safe food handling training		✓	✓	
Personal hygiene of volunteers		✓	✓	
Safe-to-eat check				✓

## Conclusions

Food rescue can be pivotal in addressing food waste and food insecurity, particularly in LMICs. Key findings stress the importance of strong partnerships between food rescue organizations, food businesses, government agencies, and other stakeholders, especially where these partnerships may be less established. The research offers valuable resources, including minimum surplus food safety guidelines and templates for partnership contracts and agreements to facilitate successful food rescue stakeholder coordination.

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