Project brief

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An Analysis of the Determinants of Food Waste in Low-Income Communities: The Case of Hatcliffe, Zimbabwe

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- **59 % of household food waste is avoidable, consisting predominantly of leftover plain starchy foods**
- **Cultural norms of preparing and serving large portions, limited refrigeration access, and constrained budgets for diverse diets shape household food waste patterns**
- **Street markets generate an average of 13 kg/stall/week of food waste, primarily due to inadequate infrastructure and poor vendor handling practices**

Background and objectives

Food waste is a global challenge, particularly for low-income communities facing hunger, malnutrition and food insecurity. Despite extensive research, knowledge about the magnitude and nature of household and street market food waste in Sub-Saharan Africa is limited. This gap limits efforts to design locally relevant food waste reduction strategies. This study analyses the characteristics and determinants of food waste in a low-income urban community, using Hatcliffe, Zimbabwe, as the case study. The specific objectives are as follows:

- Characterise and quantify the food waste generated in households and at the street market
- Explore the causes of food waste in low-income households and at the street market
- Analyse the spatial and temporal variations of household and street market food waste
- Recommend evidence-based strategies for urban household and street market food waste reduction that can be adopted in low-income communities

Approach

We collected data across two 2023 agricultural seasons: the harvest (May–June) and lean (October–November) seasons. Systematic random sampling was used to select 200 households per season for a questionnaire survey, with 150 households participating in a 7-day kitchen diary survey and Waste Composition Analysis (WCA). For the street market study, an informal retail common in Zimbabwe and Sub-Saharan Africa, we selected 33 vendors during the harvest season for WCA, with 25 completing a questionnaire survey. In the lean season, 14 vendors completed the questionnaire survey, while a bulk sampling method was used for WCA at a central collection point. We conducted semi-structured interviews with eleven experts from Mauritius, Nigeria, Botswana, Kenya, Ethiopia, Tanzania, South Africa, and Zimbabwe to explore food waste reduction strategies in urban areas. Guided by a Social Practice Theory (SPT) framework, the study examined how socio-cultural meanings, access to material resources, and embodied competences in the everyday life of households and vendors shape food waste patterns. Data were analysed using descriptive statistics, multiple linear regression, and thematic analysis.

Results

Households generate an average of 3.19 kg of food waste per week, equivalent to 46 kg per capita annually. Avoidable food waste constitutes 59 % of the total waste, compared to 12 % that is potentially avoidable and 29 % that is unavoidable. Cooked starchy foods, including sadza (thick maize-meal porridge), rice and pasta, constituted 51 % of the total food waste mass (see fig. 1). Sadza constituted 71 % of the total mass in this category and 35 % of the total food waste mass, making it the most wasted food item. Vegetables, including the African kale varieties, cabbage and tomatoes, accounted for 32 % of the waste. Fruit waste (9 %) consisted of bananas, lemons and oranges.

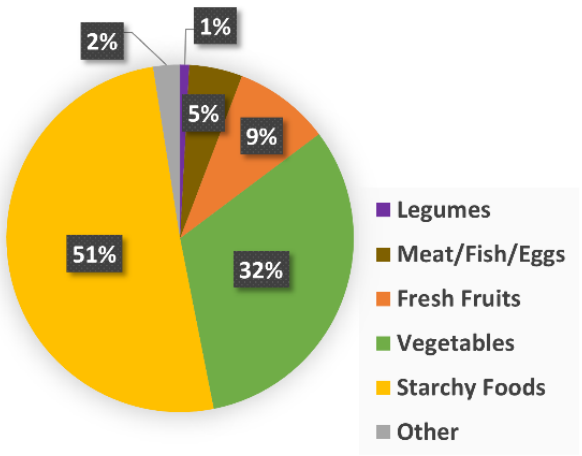

Figure 1: Household food waste composition by product group (Source: own data).

In terms of seasonal variation, higher quantities of household food waste were observed during the lean season. Using the SPT, limited access to material resources such as refrigeration,

an inadequate relish to serve with starchy dishes, a limited variety of dishes, challenges in food preservation, limited culinary skills, and cultural norms in food preparation, serving, and consumption have been identified as key drivers of household food waste (see fig. 2). At the street market, the results show that 690 kg of food waste is generated per stall annually, of which 83 % is avoidable. Fresh vegetables (including tomatoes, cucumbers, bell peppers, and leafy greens) constituted 71 % of the total waste mass, followed by fresh fruits (bananas, lemons, and oranges) at 21 %. Fresh tomatoes accounted for 20 % of total vegetable waste and 14 % of overall waste collected, making them the most wasted product.

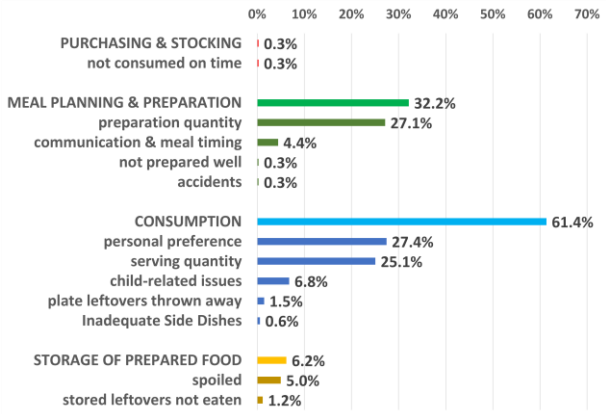

Figure 2: Reasons for household food waste (Source: own data).

The primary reasons for this disposal were material-related factors, such as inadequate infrastructure, including cold storage, proper stalls and sheds cited by 56 % of vendors (see fig. 3), and limited vendor competences in product handling. The findings also show that socio-cultural preferences for aesthetically perfect produce reduced consumer demand for "imperfect" items, leading to their disposal at the street market. Similarly, the culturally embedded food norms led consumers to buy what they were accustomed to eating, resulting in the prioritisation of staple products such as tomatoes, leafy greens, and potatoes. This attitude led to the wastage of items, which were perceived as luxuries.
We identified several food waste reduction techniques used by households and market vendors in Zimbabwe and across Africa. These include salting and smoking, drying, and fermenting. Private and government initiatives such as food rescue and redistribution, consumer education, creating recipe books, cooking demonstrations, and infrastructure upgrades were also identified. Critical gaps remain in policy implementation, however, marked by inconsistent food waste measurement, a lack of regulatory frameworks, and missing legally binding targets and strategic roadmaps across Africa to reduce food waste at the household level, recommendations include increasing awareness of proper food storage and creatively reusing leftovers.Education on issues such as over-preparation, portion sizes, and the perceived value of food can help challenge existing norms and other practices that contribute to household food waste.
At the street market, waste reduction efforts should focus on improving infrastructure, such as wide-shaded stalls and non-electrified low-cost cooling technologies. There is a need to educate vendors on best practices for food handling and preservation. Additionally, raising consumer awareness about the value of "imperfect" products can help shift meanings related to appearance and contribute to reducing food waste at both levels. A key action for reducing fruit and vegetable waste from street markets is to establish a rescue and redistribution system to ensure that surplus food is distributed to support vulnerable households.

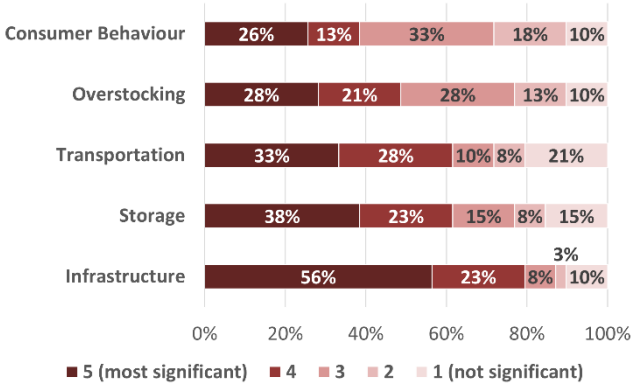

Figure 3: Perceptions of vendors on factors contributing to food disposal at the street market (Source: own data).

Conclusions

The main finding of this study is that a substantial share of food waste generated in both households and street markets in Hatcliffe is avoidable. This highlights the need for immediate action to prevent and reduce a significant loss of edible food and its corresponding nutrients in food-insecure, low-income communities. Simultaneously, these strategies must challenge socio-cultural norms and build culinary skills to encourage the use of edible, yet commonly discarded, food parts. Effective strategies must also prioritise implementing practical, sustainable solutions to minimise unavoidable waste, including animal feed, and circular economy (e.g., composting and biogas production). Addressing food waste in Sub-Saharan Africa requires frameworks that shift socio-cultural meanings, enhance competences, and provide adequate material resources to reshape food waste patterns, while also actively involving diverse stakeholders.

Further information

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