

Food Rescue Program: Reducing Urban Household Food Waste and Strengthening Community Food Security

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Abstrak

Kawasan perkotaan menghadapi tantangan ganda yaitu tingginya limbah pangan dan kerentanan ketahanan pangan rumah tangga. Kegiatan pengabdian kepada masyarakat ini bertujuan untuk mengurangi limbah pangan dan memperkuat ketahanan pangan masyarakat perkotaan berpenghasilan rendah melalui program *food rescue* yang dilaksanakan di Kampung Penduduk (KP) Gembong RT 10, Surabaya, Indonesia. Kegiatan ini meliputi tiga tahap utama: penyortiran bahan pangan untuk memastikan kelayakan dan keamanan konsumsi, pengemasan sesuai kebutuhan rumah tangga, serta distribusi langsung kepada penerima manfaat. Sebanyak 30 kepala keluarga penerima manfaat menerima lebih dari 100 paket bahan pangan yang terdiri atas bahan pangan kering, minuman kemasan, makanan ringan, susu bubuk, dan produk roti. Bahan pangan surplus yang masih layak konsumsi diidentifikasi dan dialihkan sebelum menjadi limbah melalui mekanisme redistribusi yang terstruktur. Hasil kegiatan menunjukkan bahwa program ini efektif dalam menyalurkan pangan tersebut kepada rumah tangga rentan di perkotaan, sehingga berkontribusi pada pengurangan beban pengeluaran pangan jangka pendek dan penurunan timbulan limbah organik. Pendekatan berbasis komunitas memungkinkan distribusi yang tepat sasaran dan adaptif, sekaligus memperkuat solidaritas sosial antara relawan dan warga. Simpulan, program *food rescue* dapat menjadi intervensi sosial yang efektif untuk menjembatani kesenjangan antara surplus dan defisit pangan di tingkat komunitas, serta memberikan kontribusi simultan terhadap ketahanan pangan dan keberlanjutan lingkungan. Meskipun demikian, kerentanan pangan yang bersifat struktural masih memerlukan strategi jangka panjang yang saling melengkapi.

Kata kunci: *Food rescue*; Ketahanan pangan perkotaan; Pengabdian masyarakat; Pengurangan limbah pangan; Manajemen pangan berkelanjutan

Abstract

Urban areas face the dual challenges of food waste and household food insecurity. This community service activity aimed to reduce food waste and strengthen food security among low-income urban communities through a food rescue program implemented in KP Gembong RT 10, Surabaya, Indonesia. The activity involved three main stages: sorting of food items to ensure edibility and safety, packaging according to household needs, and direct distribution to beneficiaries. A total of 30 beneficiary families (household heads) received over 100 food packages containing dry food, beverages, snacks, powdered milk, and bakery products. Surplus food that remains fit for consumption is identified and diverted before becoming waste through a structured redistribution mechanism. The results indicate that this program effectively channels such food to vulnerable urban households, thereby reducing short-term household food expenditure and decreasing organic waste generation. The community-based approach enabled targeted and adaptive distribution, strengthening social solidarity between volunteers and residents. In conclusion, food rescue programs serve as a viable social intervention to bridge food surplus and deficit at the community level, contributing simultaneously to food security and environmental sustainability. However, structural food insecurity requires complementary long-term strategies.

Keywords: *Food rescue*; Food waste reduction; Urban food security; Community service; Sustainable food management

INTRODUCTION

Urbanization in developing countries has created a paradoxical condition where rapid economic growth coexists with persistent social and environmental challenges. As one of Indonesia's largest metropolitan areas, Surabaya exhibits high population density, significant mobility, and complex socio-environmental problems (Anggraini et al., 2024; Murtadho & Roziqin, 2018; Sa'ir et al., 2020). Among these challenges, food waste and household food insecurity remain two critical issues that have not been adequately addressed. A substantial amount of edible food is wasted due to imbalances in distribution systems, changing consumption patterns in urban communities, and the lack of effective mechanisms to channel surplus food to those in need (Haikal et al., 2024; Pamungkas et al., 2020; Puspaningtyas et al., 2024).

This situation stands in stark contrast to the social reality found in several densely populated settlements in Surabaya, particularly Kampung Penduduk (KP) Gembong RT 10. This area is predominantly inhabited by lower-middle-income households for whom meeting daily food needs remains a persistent challenge. Limited purchasing power and inadequate access to sufficient food make this community vulnerable to food uncertainty, especially amid fluctuating prices and availability of basic commodities (Ramadhani & Fatimah, 2023). On the other hand, urban food waste represents an underutilized resource. The accumulation of still-edible leftover food is a common issue faced by businesses in the hospitality, restaurant, café, catering, bakery, and other food industries (Mulyo et al., 2022; Suryana et al., 2023; Debby et al., 2025). Food items that are not efficiently distributed risk becoming waste, despite retaining nutritional value and potential benefits if properly managed. This situation calls for alternative approaches that go beyond conventional food aid and instead focus on sustainable food rescue and redistribution.

Food rescue programs have emerged as one such social initiative. These programs focus on rescuing edible food before it becomes waste and redistributing it to communities in need (Eitiveni et al., 2025). Food rescue involves recovering surplus food from industrial sectors, followed by quality control, repackaging, and distribution to underprivileged groups. Through this approach, food waste and food security issues can be addressed simultaneously. Food rescue activities not only provide direct benefits to beneficiaries but also contribute to reducing the environmental impact of organic waste (Hecht & Neff, 2019; Wolfson & Greeno, 2018). The involvement of university students and academics as volunteers in food rescue activities represents a concrete form of community service implementation. This volunteer-based approach enables direct interaction with target communities while providing empirical experience in understanding grassroots social problems (Afandi et al., 2024). For the residents of KP Gembong RT 10, the presence of volunteers in food distribution activities offers tangible support in meeting their daily food needs.

Beyond its immediate social function, participation in food rescue also holds educational value for both volunteers and community members. Such activities can foster collective awareness regarding responsible food management, waste reduction, and social solidarity in urban environments (Sadovska et al., 2026). This community service activity is oriented not only toward short-term outcomes such as food distribution but also toward the formation of sustainable values and awareness. Based on this background, community service activities through volunteer participation in a food rescue program at KP Gembong RT 10, Surabaya, are highly relevant. This activity is expected to make a tangible contribution to supporting food security among low-income communities while simultaneously contributing to collective efforts to reduce food waste in urban areas. The objectives of this community service activity are: (1) to rescue and redistribute edible surplus food that would otherwise become waste; (2) to support household food security among 30 beneficiary families in KP Gembong RT 10, Surabaya; (3) to reduce organic waste generation through food recovery; and (4) to strengthen social solidarity between volunteers and the urban poor community.

METHOD

The community service activity was conducted at Kampung Penduduk (KP) Gembong RT 10, Kapasari, Surabaya, East Java, Indonesia. This location was selected due to its characteristics as a densely populated urban settlement with a predominance of low-income households engaged in the informal sector, making it highly relevant for a food rescue intervention.

The target community consisted of 30 household heads (kepala keluarga) residing in KP Gembong RT 10. According to prior observations (Ramadhani & Fatimah, 2023), the majority of residents work in the informal sector, such as small-scale trading, services, and daily labor, resulting in fluctuating and often insufficient income for meeting daily food needs. The physical environment is characterized by narrow alleyways and limited storage space, which influenced the design of the distribution method. The food rescue activity followed three main stages adapted from standard food recovery protocols (Gerrard, 2022; Reynolds et al., 2015): sorting, packaging, and direct distribution. Each stage is described below.

The first and most critical stage involved sorting donated food items to ensure they were safe and suitable for human consumption. A team of trained volunteers visually inspected each item based on the following criteria: (1) Intact packaging without bulging, leakage, or signs of contamination; (2) No visible damage or spoilage; (3) Expiration dates were checked, and only products within safe consumption limits were retained. Food items that did not meet these criteria were separated and excluded from distribution. The sorting process also categorized items into groups: dry staple foods, packaged beverages, processed foods, snacks, and dairy products (powdered milk). This categorization facilitated balanced packaging and ensured variety in each beneficiary package.

After sorting, all eligible food items were repackaged into family-sized parcels. Packaging was performed with attention to cleanliness, neatness, and portion adequacy. The number of parcels was adjusted based on the verified list of 30 beneficiary households to ensure fair and proportional distribution. Each parcel contained a mix of food types to provide nutritional diversity. Packaged parcels were then arranged systematically for easy transport and handover. The final stage was direct distribution of the food parcels to the 30 beneficiary households. Distribution was carried out by volunteers in coordination with local community leaders to ensure that recipients matched the pre-identified list. To avoid crowding and maintain order, a staggered distribution flow was arranged. Each household received one parcel of comparable quantity and composition.

During distribution, volunteers also engaged in brief interpersonal communication with beneficiaries, conveying messages about responsible food use and reinforcing social solidarity values. Thus, distribution served not only as material aid but also as a means of building humane, participatory relationships between volunteers and the community. The rescued food items consisted of surplus edible products sourced from commercial activities in the surrounding Kapasan trading area, including hospitality, restaurant, café, catering, bakery, and other food businesses (Mulyo et al., 2022; Suryana et al., 2023; Debby et al., 2025). The final distributed items included: (1) Dry staple foods; (2) Packaged beverages; (3) Snacks; (4) Powdered milk; (5) Bakery products (bread and pastries); (6) In total, over 100 food parcels were distributed.

The activity involved university students and academic staff as volunteers, reflecting the community service pillar of the Tri Dharma Perguruan Tinggi (Three Pillars of Higher Education). All volunteers received a brief orientation on food safety standards and respectful interaction with beneficiaries. The activity was conducted with informed verbal consent from community leaders, and beneficiaries' privacy was respected throughout. No personal identifying information was recorded beyond household numbers for distribution purposes.

RESULT AND DISCUSSION

The community service activity successfully rescued and redistributed edible surplus food that would otherwise have become waste. A total of over 100 food parcels were distributed to 30 beneficiary households (heads of families) in KP Gembong RT 10, Surabaya. The rescued food items comprised a variety of daily consumables, including dry staple foods, packaged beverages, snacks, powdered milk, and bakery products. All items had passed a rigorous sorting process to ensure they were safe for consumption and free from spoilage or contamination. The immediate quantitative outcome distribution to 30 families with more than 100 parcels demonstrates that even a single day, volunteer-driven food rescue operation can achieve meaningful scale in a dense urban settlement. This finding aligns with previous research indicating that community-based food redistribution can effectively reach vulnerable households in a short time frame (Subri et al., 2025; Montoli et al., 2023).

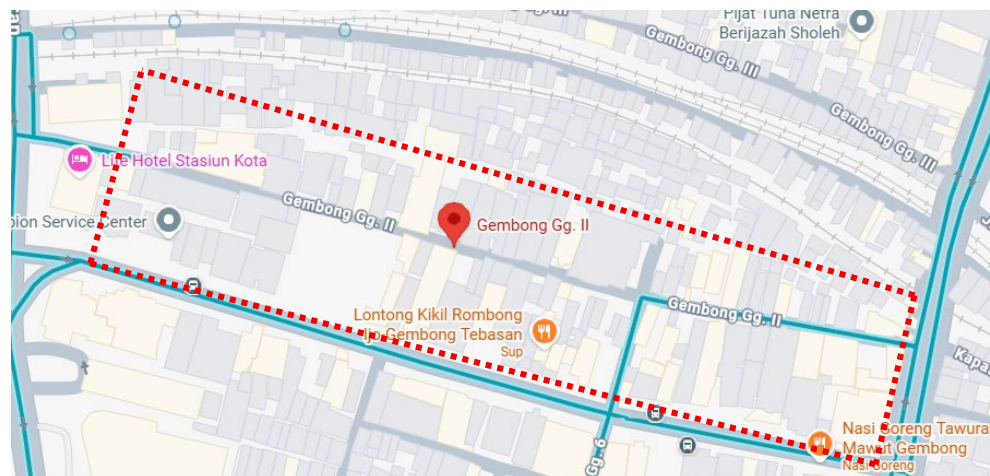


Figure 1. Location map of KP Gembong RT 10, Kapasari, Surabaya, showing the dense settlement surrounded by commercial trading areas (source: Google Maps with author annotation)

The diversity of food items distributed contributed to meeting multiple household consumption needs. Beyond basic staples, beneficiaries received supplementary products such as milk and snacks, which helped address short-term nutritional gaps. For families with irregular incomes characteristic of the informal sector in KP Gembong (Ramadhani & Fatimah, 2023) this assistance directly reduced daily food expenditure burdens. This result supports the findings of Zervoudi et al. (2025), who emphasized that surplus food redistribution has significant social and economic contributions within a sustainability framework, particularly by improving food access and strengthening the well-being of vulnerable urban groups. Similarly, Sundin et al. (2023) demonstrated that surplus food donations generate simultaneous environmental, economic, and social value, primarily by reducing household expenditure and enhancing food security, although they also noted limitations in addressing structural causes of food insecurity. Thus, while the present activity provided immediate relief, it does not claim to solve chronic food insecurity. Rather, it serves as a complementary, short-term intervention that mitigates acute gaps in household food availability.

The distribution mechanism coordinated with local community leaders and based on a pre-verified list of 30 household heads ensured that aid reached the intended recipients without leakage or exclusion. The physical environment of KP Gembong, characterized by narrow alleyways and limited storage space, required adaptive measures: parcels were sized appropriately for small households, and distribution was staggered to avoid crowding. This adaptive, community-based approach proved effective in responding to local needs. Subri et al. (2025) found that community-driven programs yield tangible impacts in addressing basic needs, especially under conditions of economic constraint and social vulnerability. Montoli et al. (2023) further confirmed that food donation programs run through community organizations and social institutions have high potential to respond to urban food vulnerability because they can directly and flexibly reach at-risk groups.



Figure 2. Composition of rescued food items distributed to 30 households (private documentation)

Beyond material outcomes, the food rescue activity generated positive social impacts. Direct face-to-face distribution created humane, participatory interactions between volunteers and residents. Beneficiaries were not merely passive recipients; they engaged in brief conversations, expressed gratitude, and shared their daily struggles. This process strengthened social solidarity and

mutual trust. The principle of equitable distribution each household receiving a comparable parcel helped minimize potential jealousy or social friction within the community. Orderly and transparent distribution also enhanced residents' trust in community-based social activities. These findings underscore that food rescue, when implemented with attention to procedural justice, can reinforce local social cohesion and revive values of mutual cooperation (*gotong royong*) in urban settings.

From an environmental perspective, the activity prevented an estimated significant quantity of edible food from entering the waste stream. By redirecting surplus food to human consumption rather than landfill, the program reduced potential organic waste accumulation. This aligns with the principles of sustainable food resource management, where food is viewed as a valuable resource to be used efficiently. Although implemented at a community scale, this activity demonstrates that food rescue can serve as a practical solution to bridge the gap between food availability and community needs, while supporting the efficiency of urban food systems. The environmental co-benefit reduced methane emissions from decomposing organic waste though not directly measured, is well established in the literature (Hecht & Neff, 2019; Wolfson & Greeno, 2018).



Figure 2. Direct distribution of food parcels to beneficiary households in the narrow alleyways of KP Gembong (private documentation).

The successful execution of this food rescue activity offers several reflective insights for university-based community service. First, meaningful community engagement does not always require large-scale programs or formal institutional partnerships. Responsive, direct action by motivated volunteers can generate tangible social and environmental benefits. Second, this activity provided empirical learning for volunteers regarding the realities of urban food insecurity and distribution challenges at the grassroots level. Such experiential learning strengthens social awareness and reinforces the role of academics and students in implementing the *Tri Dharma Perguruan Tinggi* (Three Pillars of Higher Education), particularly the community service pillar. Third, the activity revealed areas for future improvement: more systematic documentation (e.g., weighing rescued food, pre-post surveys of household food security), longer-term follow-up with beneficiaries, and potential replication in other urban *kampung* settlements. With better planning and monitoring, the impact of food rescue as a sustainable community service model can be further optimized.

Several limitations should be acknowledged. The activity was a single-day intervention, so long-term effects on household food security were not assessed. No formal pre-test/post-test was administered; outcome measurement relied on quantitative counts (parcels, households) and qualitative observations. Additionally, the rescued food depended on unscheduled surplus donations from commercial sources, making supply irregular. Future iterations should incorporate structured partnerships with food businesses and systematic impact evaluation.

CONCLUSION

This community service activity successfully rescued over 100 parcels of edible surplus food and distributed them to 30 vulnerable households in KP Gembong RT 10, Surabaya, thereby reducing household food expenditure, preventing organic waste from entering the landfill, and strengthening social solidarity between volunteers and residents. Despite limitations as a single-day intervention without systematic pre-post measurement, the program demonstrates that volunteer-driven, community-based food rescue is a feasible and effective model for simultaneously addressing urban food waste and household food insecurity. Future activities should incorporate formal partnerships

with food businesses, systematic impact evaluation, and long-term follow-up to maximize sustainability and scalability.

RECOMMENDATION

For the KP Gembong RT 10 community, it is recommended to maintain the solidarity and mutual cooperation built during the activity and to initiate a simple community-led food sharing mechanism. For future community service activities, more systematic planning is needed, including quantitative impact measurement through pre-test and post-test on household food security, weighing the amount of food waste successfully rescued, and conducting follow-up assistance for at least one month after distribution to monitor changes in food management behavior. For higher education institutions, this food rescue model should be integrated into the regular community service curriculum (e.g., thematic student community service programs) to ensure continuity, and results should be published as case studies to enrich the literature on food rescue in densely populated urban settlements in Indonesia

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