

AGRICULTURAL RECOVERY

Food Banking Kenya

The Context in Which Food Banking Kenya Operates

Notably, Kenya’s food loss index has decreased from 1,744 metric tons in 2017 to 1,446 metric tons in 2019. However, a significant proportion of food produced in the country goes to waste, representing a missed opportunity in closing the gap in severe hunger. [The World Food Programme’s Hunger Map](#) estimates that 13.6 million people (26.5% of the total population) experience insufficient food consumption, with 40% of the total food produced going to waste every year according to [The Global Food Donation Policy Atlas](#). Food Banking Kenya (FBK) reduces food loss and waste by bridging the gap between surplus agricultural production and vulnerable communities across the country.

There are opportunities to expand FBK’s efforts on agricultural recovery to boost food sourcing efforts by the food bank. However, data on food loss and waste in the key value chains remain fragmented, causing a challenge in designing targeted sourcing and need mapping strategies.

Food Banking Kenya Agricultural Recovery Profile

Since 2022, Food Banking Kenya has served a total of 811,667 people and recovered and distributed 1,573,910 kilograms through their virtual and warehouse-based model. More than 80% of food recovered and distributed is sourced from various agricultural recovery programs – 89% in 2023 and 88% in 2024. This is indicative of the role that agricultural recovery in food sourcing and the untapped potential (considering the increase in percentage).

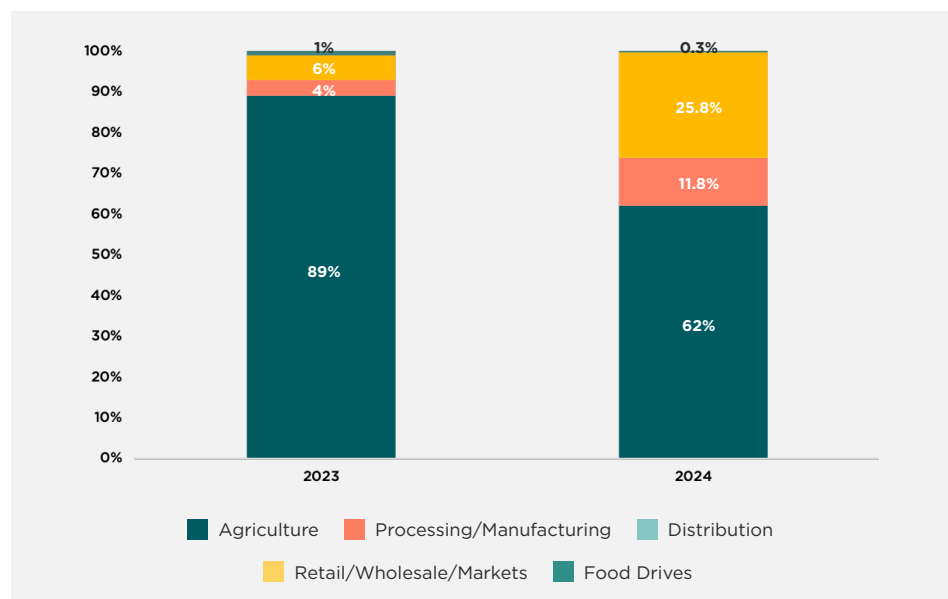


Figure 1 - Donation by sector of the supply chain. (Agriculture =smallholder farmers, commercial farms and packhouses and wholesale markets which are currently classified separately under the "Retail/Wholesale markets" category. Market recovery increased in 2024 due to expansion to new markets and the use of Foodiverse app for direct collections.

FBK has developed a multi-faceted agricultural recovery program consisting of three pillars:

- Collecting surplus product from commercial farms (12 farms in three counties as of June 2024)
- Partnering with 600 smallholder farmers in Nyandarua, Nakuru, Kirinyaga and Kiambu counties
- Collecting surplus from five packhouses that primarily serve the export market

Summarily, FBK's agricultural recovery partners are as shown below. The percentage of food sourced from each partner in 2023 and 2024 is also indicated.

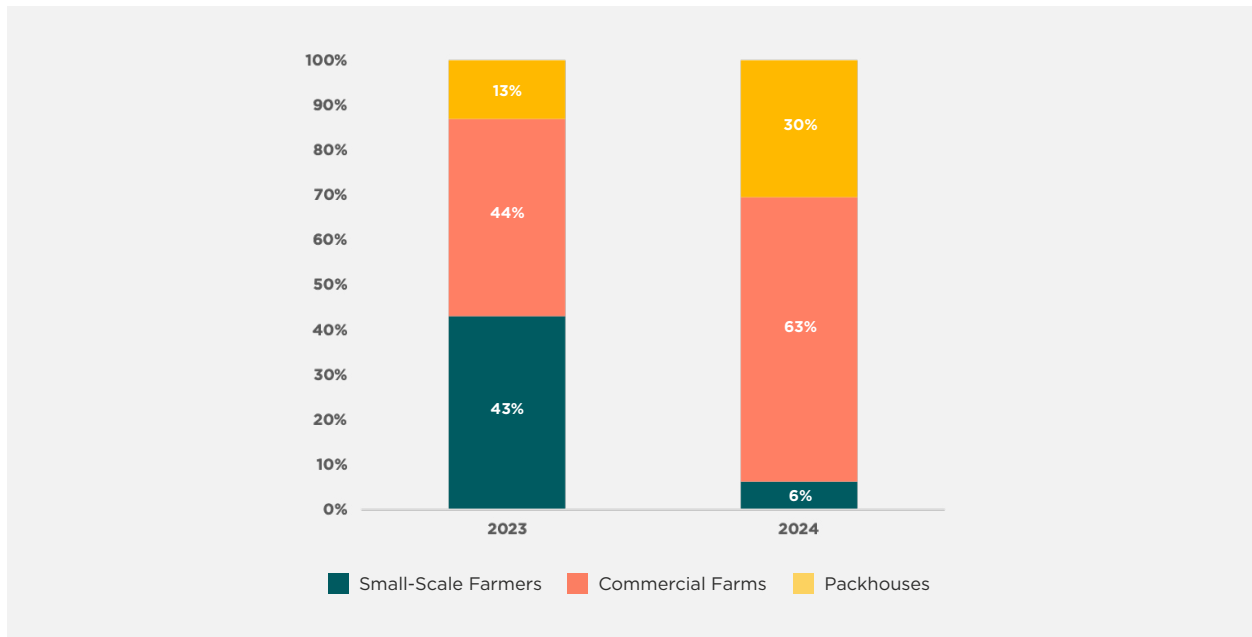


Figure 2 - Trends in FBK's agricultural recovery food sourcing, excluding market recovery which was launched in late 2023.

Agricultural Recovery Models

On-Farm/Farm-Gate Recovery

Agricultural recovery at farm gate presents the biggest value creation opportunity for smallholder partners. This model of recovery is an opportunity to build partnerships, especially with small-scale farmers i.e. farmers who farms on a piece of land 2 acres or less in size – particularly because smallholder farming accounts for 80% of all agricultural output in Kenya. It also allows the food bank to promptly recover fresh food that would have otherwise been ploughed back into the soil by farmers. The FBK container at Kamae receives food donations from about 400 small-scale farmers from the region. Most of these farmers donate surplus food from their farms to serve people facing hunger. Their commitment to donation is propelled mostly by the impact created on the community.



Fresh farm produce — mostly vegetable and tuber crops — are aggregated at their rural depot. The container manager, who works with 10 other field coordinators spread across the region, is compensated for his work on farmer engagement, maintenance of the demo farm, and management of the donations and barter with farmers. FBK plans to hire another staff member who will be more hands-on with data collection on the opportunities for agriculture recovery in the three counties — Kiambu, Nyandarua and Murang'a, where there is significant untapped potential for agriculture recovery.

The food bank enjoys an excellent relationship with its network of farmers, who are readily willing to donate surplus food to feed the hungry. FBK does some barter with the farmers/ farming community, i.e. the exchange of shelf-stable products like flour for fresh farm produce. However, this barter system is not structured. The smallholder coordinator says that farmers are given dry foods as a means of appreciation for donating, but this exchange is not necessarily transactional. In fact, some of the dry foods that come to the container are given to the most vulnerable families in the farming community. All dry food leaving the warehouse is recorded on a dispatch form to help with inventory management. Similarly, all fresh farm produce brought from the rural depot is weighed and recorded at the warehouse. However, there is no set metric to standardize the volumes exchanged.

In terms of logistics, some farmers bring their surplus produce to the container. In cases where there is a significant amount of food in distant farms, FBK facilitates transport for pick-up. As the food bank expands in ground coverage, it would be worth exploring the role of field coordinators in aggregating products from 10 to 20 farmers and then alert FBK to pick up. This will be informed by the decision on what is the minimum number of kilograms FBK deems worth arranging for pick-up.



The non-transactional nature of this farmer-food bank relationship is evident in the type of data collected at the depot. For instance, records are kept of the names of farmers, the products donated and the amounts donated. The amount (in kilograms) of shelf-stable products is only recorded at the point of dispatch from the warehouse. The distribution of these shelf-stable products at the depot is not recorded.

Farmers donate leafy vegetables and tubers from their farms, most of which are donated at the peak harvesting seasons for each crop. One of the biggest challenges is that farmers plant one type of crop in a particular season, which leads to market flooding by the same crop at harvest. For example, in March, FBK receives 8 tons of carrots per week because of excessive production in the farms. While this is good for the food bank from the perspective of food sourcing, it also represents a significant loss of value for the farmers.

Therefore, there is an opportunity to train farmers in crop diversification to ensure that they get returns from their farming business. FBK is working closely with Agrico and county agricultural extension officers on different aspects of farmer training — planting compliance, crop management. Recognizing the challenges faced by smallholder farmers in market access and the complexities of creating value for farmers, crop diversification should be included as part of these farmer training modules.

Social behavior change and enabling market access are not core functions of a food bank. However, they are important factors that affect farmers. Exploring ways in which partnerships can be leveraged to create value for farmers has potential positive impact for both farmers and the food bank.

Recovery at Commercial Farms

FBK partners with five large-scale farmers and agri-commercial companies located within a 100-kilometer radius from the central warehouse in Nairobi. FBK recovers surplus agricultural produce, assorted vegetables for the most part. This category of agricultural recovery partner forms the largest contributor, accounting for 44% of agricultural recovery in 2023 and 67% as of June 2024. Farmers and companies donate surplus edible food that would otherwise go to waste because of one of more of the following reasons: cosmetic preferences by consumers, decreased demand in export markets, excess production/market saturation, market price fluctuations, lack of proper storage for perishable produce. Food Banking Kenya provides logistical support for collection and transportation, ensuring that the surplus food is efficiently recovered and redistributed to partner agencies or to the warehouse for storage.

For these large commercial farmers, collection is typically done twice per week during peak production season. Given the distance between the warehouse and the farms, FBK has established a minimum viable collection amount at 3 metric tons to enable maximization on logistics efficiency. There is only an exception for Simply Fine, a partner that donated processed potatoes. For processed potatoes from Simply Fine, FBK uses small vans to collect potato excess not taken by beneficiaries in and around Naivasha. This is because beneficiaries typically collect between 300 and 400 kilograms of processed potatoes. The surplus is then collected regardless of the volume for timely distribution given the perishability of the processed potatoes. There is an opportunity to hire field coordinators to map out beneficiary locations to be able to collect all food produced in Naivasha, thereby reducing the transport and logistics cost from the Nairobi warehouse.

Recovery at Pack Houses

Packhouses are facilities where fresh produce is sorted, graded and packed for distribution, usually for export markets. FBK recovers food from six pack houses within Nairobi and its environs, located between 30 and 100 kilometers from the central warehouse. These include Phyma Fresh, Wisephyk Produce Limited and East Africa Growers. These packhouses present an important opportunity in the chain to recover fruits and vegetables since significant food loss and waste occurs during this post-harvest process. Food loss and waste at packhouses can occur due to a variety of factors, including inadequate infrastructure, poor handling practices, lack of modern technology and inefficient logistics. Improper storage conditions and handling can cause significant physical damage and spoilage of produce. Another key driver for food waste and loss at the packhouse level is market requirements and specifications on cosmetic standards. The processes of grading and sorting result in rejection of produce that may not meet these specifications, hence leading to wastage.



FBK actively engages with these export companies and packhouses to recover agricultural produce that may not meet export quality standards or is surplus after meeting export demands. Through active partnerships with these entities, FBK retrieves the surplus produce and ensures it reaches vulnerable populations. This serves as an alternative outlet for the produce, preventing it from being wasted.

Packhouses, especially those owned by large commercial farms with existing partnerships with FBK, can be leveraged to unlock larger volumes for agricultural recovery. For most commercial farms, primary production and packhouses are managed separately, hence the need to tailor partnership strategies to each segment of their operations, with the advantage of existing partnerships.

Low-Cost Value Addition of Agricultural Products

The seasonality of agricultural production, especially among smallholder farmers, is potentially a key driver for fluctuation in the kilograms of food sourced from agricultural recovery. Investment in value addition is a great way to preserve quality nutritious and highly perishable food in storage for extended periods of time. Processing and value addition also solve the challenge faced by the food bank of distributing food to beneficiaries before it spoils, allowing for planned distribution of useful volumes. Extending the shelf-life of food ensures the availability of nutritious food throughout the year even during production off-peaks. Some forms of value addition like dehydration significantly reduce the volume due to loss of water, with much of the nutrients remaining fixed in the dried product. Notably, factors such as palatability and consumer preferences are critical to consider, ensuring that even with change in form, food will still be acceptable and useful for the beneficiaries. There has been low adoption of dried foods because of a lack of familiarity and knowledge on how to prepare it. This is especially in areas where fresh food is easily available and there has never been a need to preserve surplus by drying. FBK is working to establish a social behavior change strategy to improve adoption of dried produce. This strategy will include culinary training and live meal preparations of dried foods such as vegetables.

With an increasing need to serve more vulnerable communities and to recover more food from farms, Food Banking Kenya is investing considerable efforts in food sourcing, with agricultural recovery forming a big part of their recovery strategy. Given the agricultural production cycles and dynamics, a lot of fruits and vegetables are donated during production peak. This is because most farmers grow one type of crop per season. As a result, more surplus produce remains at the farms due to perishability and market saturation, since farmers do not have the financial flexibility to incur further costs on transport and logistics. This limitation further increases the percentage of food loss and waste at farm level.



At the same time, beneficiary agencies can only take a maximum amount of food at any given time to ensure consumption in a safe and nutritious state. This means that Food Banking Kenya can only recover a limited amount of food even with surplus during peak harvest season. For example, the 40-foot rural container is filled with surplus fresh produce from farms during harvest season. During harvest season, there are even more crops left unharvested in the farms that, without the partner agencies' capacity to store appropriately and consume, are left unrecovered in their fresh state. Therefore, exploring innovations to increase shelf life and stability is both critical and has a high return on investment. Adding value/processing farm products also allows food banks more time to distribute and expands their capacity to do so even after production peak, ensuring sustained service to vulnerable communities. Some examples of low-tech value-addition methods include applying edible wax coating such as Kafresh and solar dehydration and processing of flour from tuber and seasonal vegetables. Preliminary trials using wax coating donated by Kafresh have yielded positive outcomes in product shelf life.

Food Banking Kenya has two solar dehydrators located at their rural depot in Kamae (300-kilogram capacity) and at [Marura Farm](#) in Naivasha (400-kilogram capacity). These dehydrators are used to process surplus vegetables – cabbages, kales, carrots and stinging nettle – from smallholder farms and a commercial farm respectively to further increase their shelf life. Drying extends the shelf-life of the vegetables from 7 days to 12 months, allowing for availability of nutritious food long after harvest peaks. This also further reduces post-harvest loss. The process of drying leafy and high-water content vegetables such as cabbage takes 2 to 3 days using a solar dryer. Other vegetables such as kales take one day to dry. These vegetables are initially chopped to increase efficiency of the drying process.



Given that the rural depot and dehydrator are located 50-kilometers from the central warehouse where most operations happen, dehydration at the rural depot provides a cost-efficiency solution to FBK’s logistics. When small amounts of vegetables are aggregated at the rural depot, they are dehydrated. FBK arranges for collection of aggregated vegetables of more than 1 metric ton.

Recovery at Agricultural Markets

Market recovery is an agricultural recovery model that happens post-harvest for fresh produce that goes directly to the market without processing. This recovery happens before the much more advanced stages of the value chain. During the market recovery, most of the produce has undergone very little to no processing at all. Like on-farm recovery, food is donated by farmers who bring their produce to the markets. However, in many cases, intermediaries (or “brokers” as they are commonly referred to) also factor into the food recovery matrix. The advantage of market recovery is that food banks/ beneficiaries get a variety of nutritious food and not just one class of food – tubers, fruits, vegetables, as shown below.

Currently, FBK’s market recovery program only works with 10% of all the 30 or more fruits and vegetable markets established under the Nairobi County Government. There is an untapped potential to expand its reach into other food markets, presenting an opportunity to recover more than 2 tons metric per week. FBK is leveraging existing partnerships to engage in new markets. For example, the food bank is exploring re-entry into High Ridge market, a small fresh produce traders’ market, with which they had a linkage through a joint project with TechnoServe Kenya.

Most food markets are typically open for trading every day, with food recovery and donations made to FBK and other organizations. Therefore, market management has designed a market recovery schedule to ensure that each partner involved in market recovery (FBK, charities) is allocated a specific day and that there is proper organization and planning. Food Banking Kenya is allocated the market recovery days as shown in the table under the market profiles section below.

All market recovery is conducted through virtual food banking on the [Foodiverse mobile application](#), allowing scheduling and notification of the market manager and beneficiaries about planned market recovery. Integrating virtual food banking into the market recovery process offers a key advantage: it eliminates the need for warehousing and logistics, as beneficiaries collect donations directly from the markets. Notably, market management plays a critical role by serving as a vital link between traders and beneficiaries.

Most traders who donate are motivated by the fact that their surplus is repurposed to help feed the community around the markets. However, market recovery by FBK also offers a business optimization advantage by freeing limited stall spaces for sellable products only. Part of the stall rental fee (3,000 to 3,500 Kenyan shillings per month) is paid to the County Government for licenses, waste management and overall infrastructural maintenance. Therefore, food recovery is only a practical business solution for the traders who have a very limited amount of space to store sellable products, allowing for optimization of rented space. Market recovery is not necessarily a strong logistical solution because in the absence of a food recovery process, any surplus food is collected and transported to the market dumpsite or landfills at no additional cost to the traders.

The recovery process involves beneficiaries walking through the market from stall to stall, collecting any surplus food from traders, accompanied by FBK staff. This helps as the motivation to donate to feed the community is even more solidified during the conversations between traders and beneficiaries. This is also a timely opportunity for the food bank to engage traders in food banking. The food is collected and transported to the beneficiaries' vehicles using carts or in sacks where they are aggregated.



After all collection is completed, food is weighed and classified, either into assorted vegetables or assorted fruits then logged into the Foodiverse app, that allows for scheduling of a pick-up time between 0800h and 1600h on market days.

Market Profiles

City Park	Muthurwa	Marikiti
There are 750 fresh produce traders — 650 retail traders and 100 wholesalers. The traders are a mix of intermediaries and farmers from different agriculturally productive regions neighboring Nairobi. While a large proportion of the fruits and vegetables sold in this market is locally grown, some fruits — mainly grapes, citrus — are exported from South Africa and Egypt.		
Between 0.25 to 1 metric ton is donated to the food bank and other organizations per week	This is the largest farmers market located within Nairobi. FBK recovers 500 kilograms of assorted fruits and vegetables from Muthurwa Market every week, with recovery done only once a week. Recovery in this market has not been exhausted — the recovery operation only covers 50% of the market.	The fruit and vegetables section of the market is divided into three sections. FBK recovery operations only cover 30% of the market.
Recovery is scheduled every Tuesday and Friday.	Recovery is scheduled every Thursday.	Recovery is scheduled every Thursday.
The market stalls typically hold between 300 and -500 kilograms each.	For both Marikiti and Muthurwa, the recovery does not exhaust 100% of the market because (1) the current beneficiaries typically have enough with the current area coverage and (2) some beneficiaries have not been onboarded on the use of Foodiverse mobile app and on how to conduct recovery in the markets, hence they cannot access the markets. Training more beneficiaries is an opportunity to increase food recovery efforts from the two markets.	

Change management: There is an opportunity for awareness creation about the work that the food bank is doing and the impact, e.g. the number of meals served, families/children reached, etc. FBK is exploring the possibility of training traders on why it is important to donate and the environmental contributions of food donations. Since it is more likely that most traders donated because of the impact on community, training should have that focus. Further down the change management chain, FBK should explore training in market management and county council on waste management with a focus on why it is important to reduce the total amount of organic waste taken into landfills. Given the multifaceted nature of food loss, waste and recovery, a segmented approach to training and capacity building is not only impactful but also critical in bringing the most relevant stakeholders on board.

Mechanisms of Agricultural Recovery

FBK’s engagement strategy with its agricultural partners is premised on mutual value creation. FBK’s works with two mechanisms for agricultural recovery to foster this mutual value creation approach. These are: (1) the barter system with farming communities, where fresh farm produce from farmers is exchanged with scarce, costly shelf-stable products, strengthening partnership building between farmers and the food bank; and (2) livelihood development programs, such as farmer training on optimized crop management practices through a partnership with Agrico East Africa Limited.

Process Flow for Agricultural Recovery

FOOD SOURCE & LOCATIONS	Smallholders (rural depot aggregation Kamae) - Nyandarua & Kiambu counties	Packhouses & Commercial Farms - Naivasha & Thika	Fruit & Vegetable Markets - Nairobi
TRANSFER & TRANSPORT	Collection by FBK truck	Collection by FBK truck	Direct collection by beneficiaries
LOGISTICS & STORAGE	Transport and warehouse logistics by FBKs	Hybrid: Virtual logistics on App & transport and warehousing by FBK; Direct collections by beneficiaries.	Virtual logistics on app
DATA CAPTURE	Manual data capture (back-up on Salesforce)	Digital data capture (manual entry into Salesforce)	Digital data capture (manual entry into Salesforce)
IMPACT ASSESSMENT	Monthly impact assessment	Impact calculated on app	Impact calculated on app



Integration of Virtual Food Banking through Foodiverse

Food Banking Kenya's operations are spread across the value chain and a variety of stakeholders. With limited infrastructure and fleet (one warehouse, two refrigerated vehicles and five dry vehicles) increasing efficiency in recovery and distribution is critical, especially for small donations. For example, virtual food banking, through Foodiverse, makes micro-donations feasible, as it allows for short-distance logistics. FBK also uses virtual food banking to receive donation requests and schedule for pick up from pack houses and commercial farms such as East Africa Growers.

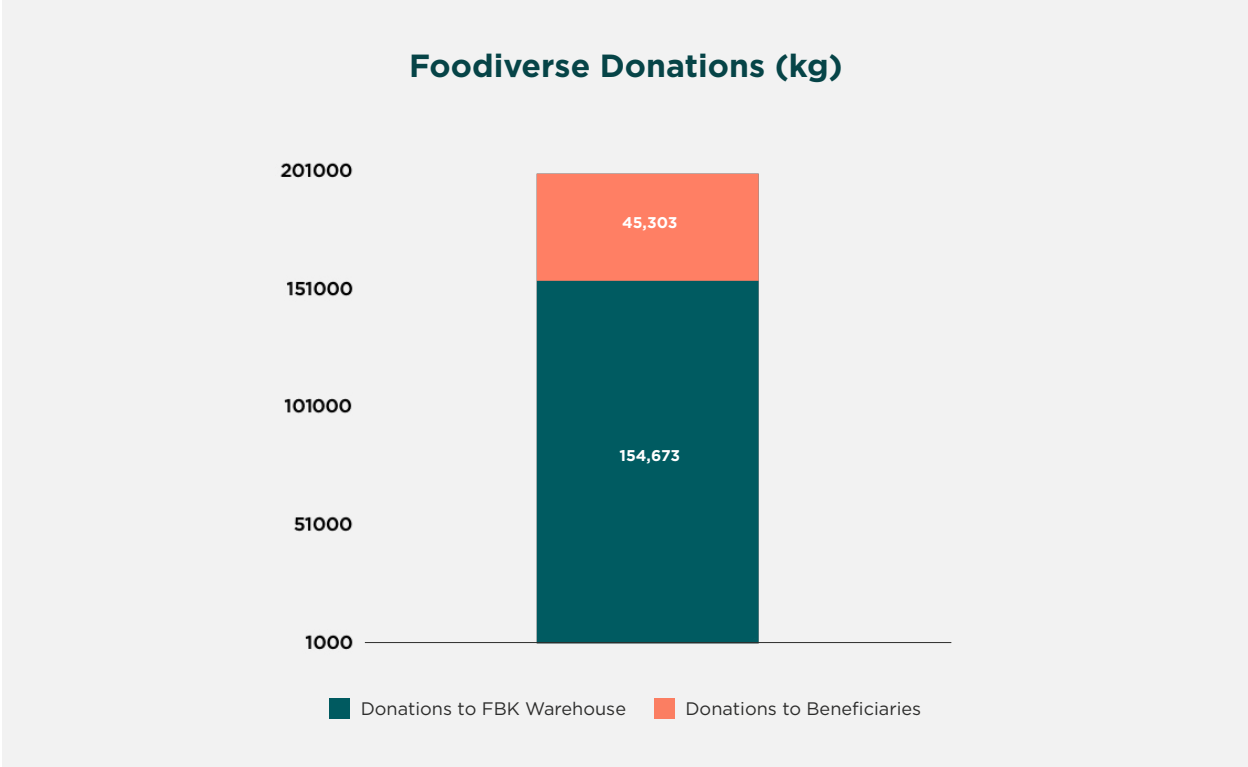
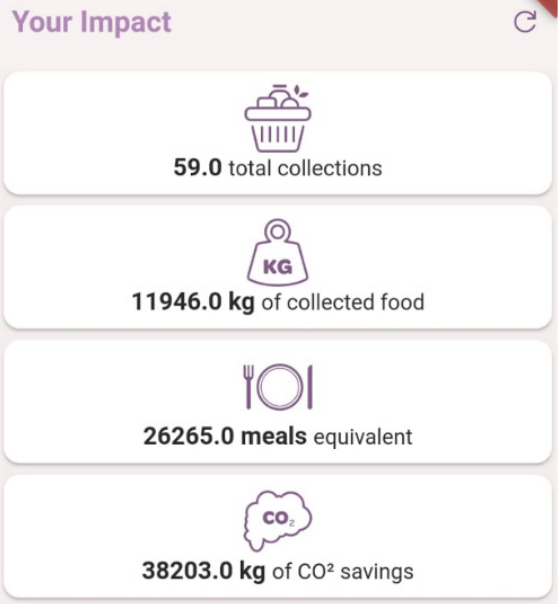
For micro-donations, food is picked directly by beneficiary agencies, such as from markets, whereas for commercial farmers and pack houses, food recovered is transported to the warehouse due to large volumes. The key advantage of managing donations virtually is that it gives a real time calculation of the impact. This is important in donor management. Donor reporting is done on a quarterly basis, e.g. EA growers, to show data on contribution to community through food donations. Given that Kenya doesn't have a tax incentive policy for food donors, this community impact communication approach is a great strategy for donor engagement. For donors who target markets that are in keeping with fair trade and environmental conservation efforts, providing a calculation of carbon emission avoided as a result of donating food is a viable strategy too.

All kilograms recovered are logged into Foodiverse, which then calculates the total equivalent of meals served and CO2 emissions avoided. Foodiverse data points on impact include total donations in kilogram (per source and aggregate), equivalent of meals served, amount of CO2 emissions avoided(kg), as shown below.

The formulas used to calculate the equivalent of meals was adopted from the [FoodCloud](#) data (1 meal = 450 gram of food recovered) and modified to suit the Kenyan context (1 meal = 230 gram of food recovered). The formula considers the dietary portions for the average consumption.

The CO2 savings formula is a universal formula applied across the FoodCloud and Foodiverse mobile application versions (3.2 kg of CO2 = 1 kilogram of fruits and vegetables recovered).

As of June 2024, nearly 200 metric tons of food was donated through the Foodiverse app, with 77% coming directly to the FBK’s warehouse and about 23% donated directly to the beneficiaries.





Opportunities for Growth in Agricultural Recovery

Closing the data gaps in food loss and waste on key value chains to guide the design of targeted recovery and expansion strategy. About 1.3 billion tons of food produced annually (about 40% on average) is lost or wasted. Data on food loss and waste remains fragmented: - where and how the loss and waste occur are not properly documented. Identifying key crop value chain opportunities will give the food bank a wider reach, especially because there is a data gap in documenting agricultural activities and potential avenues for food recovery across the agricultural value chain.

Policy lobbying and influence to incentivize food donation across the value chain. Kenyan law does not offer liability protection for food donations. A food donation recommendation policy by Harvard, Food Banking Kenya and The Global FoodBanking Network was made in 2022. Active lobbying through civil society organizations is ongoing. The timelines for results in this area is unclear. Therefore, leveraging existing strategies such as partnership building within the food systems landscape and CSR-centred communications to food donors remain critical.

Opportunity for awareness creation and visibility. While the culture of communal sharing of food has been in existence within the African communities for a long time, food banking as we know it is a fairly new concept. Therefore, creating public awareness on how food banking is helping reduce food loss and waste while feeding the hungry is key to the growth of the food bank. Food bank growth is dependent on both the donor and the beneficiary. At the same time, identifying where there is the most need, using hunger maps for example, is beneficial in exploring potential agricultural recovery partnerships to bolster food sourcing and distribution efforts by the food bank.