The Global FoodBanking Network®

AGRICULTURAL RECOVERY

Rise Against Hunger Philippines

Food Loss and Waste Landscape in the Philippines

In the Philippines, 50% of all the harvested crops are lost or wasted every year, with a large proportion of loss happening in handling and storage. Post-harvest loss affects all major crops in the country, including fruit, vegetables and pulses. Losses in rice, wheat and other cereal grains — which account for 70% of all calories consumed — could potentially present an opportunity for recovery and direct nutritional impact.

Considering the whole value chain, it is estimated that 2.5 billion tons of food is lost or wasted annually in the Philippines (Barrion et al., 2003). This data primarily includes post-harvest agricultural waste and waste from households, supermarkets and restaurants, with 1.2 billion tons of this loss happening at the farmgate. This indicates that roughly 40% of all the food we produce goes to waste. At the household level, 2.95 million metric tons of food is wasted every year according to UNEP's 2024 Food Waste Index Report, representing 26 kilograms per capita. Post-harvest loss affects all categories of crops produced in the country. More than 20% of the following agricultural products are wasted at postharvest: bananas, cabbage, calamansi, eggplant, mangoes, sweet potatoes, rice and tomatoes (Barrion et al., 2003). Other crops such as potatoes and carrots report lower loss and waste percentages.

An Overview of Agricultural Recovery at Rise Against Hunger Philippines (RAHP)

Rise Against Hunger Philippines (RAHP)'s agricultural recovery happens through three programs: Nueva Vizcaya Agricultural Terminal (NVAT), a newer urban farming program and Good Food Farm, all of which are briefly described in this overview. However, given that food bank's recovery at the NVAT is the most structured and elaborate, this case study will focus on the operations and mechanics of agricultural recovery at NVAT.

Figure 1 *- Map of the Philippines showing the locations of Manila (where the main warehouse of RAHP is located) and the agricultural regions of norther Luzon*

Nueva Vizcaya Agricultural Terminal (NVAT)

Rise Against Hunger Philippines majorly recovers surplus agricultural produce working directly with smallholder farmers who trade at the Nueva Vizcaya Agricultural Terminal. These farmers are mainly from the northern Luzon region — one of the most agriculturally rich regions of the country — farming mainly seasonal vegetables, fruits and tubers.

Urban Farming Program

Apart from the smallholder farmers, RAHP also has a network of well-established urban farms and rural farms managed by communities of women from where they source their products. The urban farms are hydroponic farms, where they plant high-value vegetables, which are supplied to retail outlets, condominium owners and restaurants. The proceeds from these sales are then used to buy vegetables for their school feeding programs in Manila. This model is based on the understanding that children do not typically consume the high-market value hydroponic salad vegetables and, culturally, prefer cooked food that they are accustomed to. For the urban farms, RAHP negotiates with building owners to donate roof decks to set up hydroponic farms.

The Good Food Farm

Additionally, RAHP owns the Good Food Farm, which is a 4.6-hectare ecotourism resort located south of Manila that supports community kitchens and schools. The farm offers training in regenerative agriculture and other ecotourism packages, generating income used to sustain its operations.

The Smallholder Farmer Profile

In this section, the case study describes the profile of smallholder farmers, who are the key partners in food recovery at NVAT, to set context.

Smallholder farmers play a crucial role in ensuring food security globally. This role is particularly pronounced in Asia and sub-Saharan Africa, where smallholders produce up to 80% of the food supply in these regions (McConville, 2016). This underscores the importance of engaging smallholders as partners in agricultural recovery in these regions. The United Nation's Food and Agriculture Organization reports that 74% of the world's 570 million farms are in Asia alone, with the largest proportion managed by smallholder farmers.

Whereas smallholder farmers play a critical role in food security in countries like the Philippines, they continue to encounter significant barriers such as access to resources needed for production. Smallholder land ownership remains limited. The NVAT trading post where Rise Against Hunger Philippines has set up a mini food bank is mainly for smallholder farmers to access markets for their produce. Most of these farmers rent land for farming. There is a well-established structure for profit-sharing between the farmers and landowners, usually 50/50 or 60 (landowner)/40 (farmer) sharing schemes. This means that farmers perennially depend on landowners to stay in the farming business because the revenue from selling vegetables is barely enough to cover the cost of production and rent for the land.

Given the poverty levels, farmers usually do not have an income during the 3-month period when vegetables are not ready for harvesting. Therefore, they borrow money from landowners, which is repaid after harvest. This further increases their dependency on the landowners. During seasons when the crop yields are low, farmers borrow again from landowners to farm the subsequent season, perpetuating the vicious cycle of dependency and poverty.

Another factor that has led to farmers continually remaining in the vicious dependency cycle is the lack of market information of specific crops grown in their regions and the volatility in terms of pricing of these products. There is no structured and predictable way in which market and pricing information is disseminated among farmers. This information is often based on what farmers experience in real time and is not ideal for planning production and harvest. For example, when farmers hear that a particular crop has fetched good prices during a particular season, there will be an incentive to overproduce that specific crop leading to saturation and low prices.

Nueva Vizcaya Agricultural Terminal (NVAT)

The Nueva Vizcaya Agricultural Terminal (NVAT) is the largest public-private trading post in the country, operated by a cooperative of traders, farmers and investors. The trading post is located in Bambang, Nueva Vizcaya, in Northern Luzon, about a 7-hour drive from Manila. It is a marketplace established on about 15 acres, consisting of hundreds of stalls housing buyers who negotiate with farmers bringing their products to the market. Established in 2006 — and with rapid growth recorded from 2013 to 2017 — the NVAT is a farmer-led trading system providing access to market for agricultural products from smallholder farmers. The terminal promotes trade between farmers and other actors in the agricultural value chain. While this trading terminal provides much-needed access to fresh agricultural produce, it is estimated that nearly half of all the food brought to the terminal is not sold. Much of this unsold yet edible produce is typically dumped at the roadside by farmers to reduce the service charge for waste management at the trading post. This signals an important need for food recovery.

The trading post is managed by the NVAT board, which consists of 11 directors and a general manager. NVAT has three grades of product: A, B and C, with grades A and C being the highest and lowest quality respectively and are based on physical standards and appeal. Market pricing is also set by NVAT for each product grade. The market is open from 0400h – 2200h, and farmers pay a small entry fee to come into the market. Crops harvested from the farms are brought in by different types of vehicles — semitrailers, trucks, minivans and pick-up trucks.

In 2023, GFN commissioned research by Accenture Development Partnerships for Rise Against Hunger Philippines (RAHP) with a grant from GFN. The research identified food loss at the NVAT and an opportunity to implement a barter system with smallholder farmers. This recommendation led to the implementation of a barter-focused agricultural recovery strategy, with RAHP establishing a mini food bank at NVAT. Active since mid-2023, the mini food bank at the NVAT recovers part of the 500 metric tons of fruits and vegetables unsold every day through a barter system. Between Q1 and Q2 of 2024, about 600 metric tons of fruits and vegetables were recovered from the trading post.

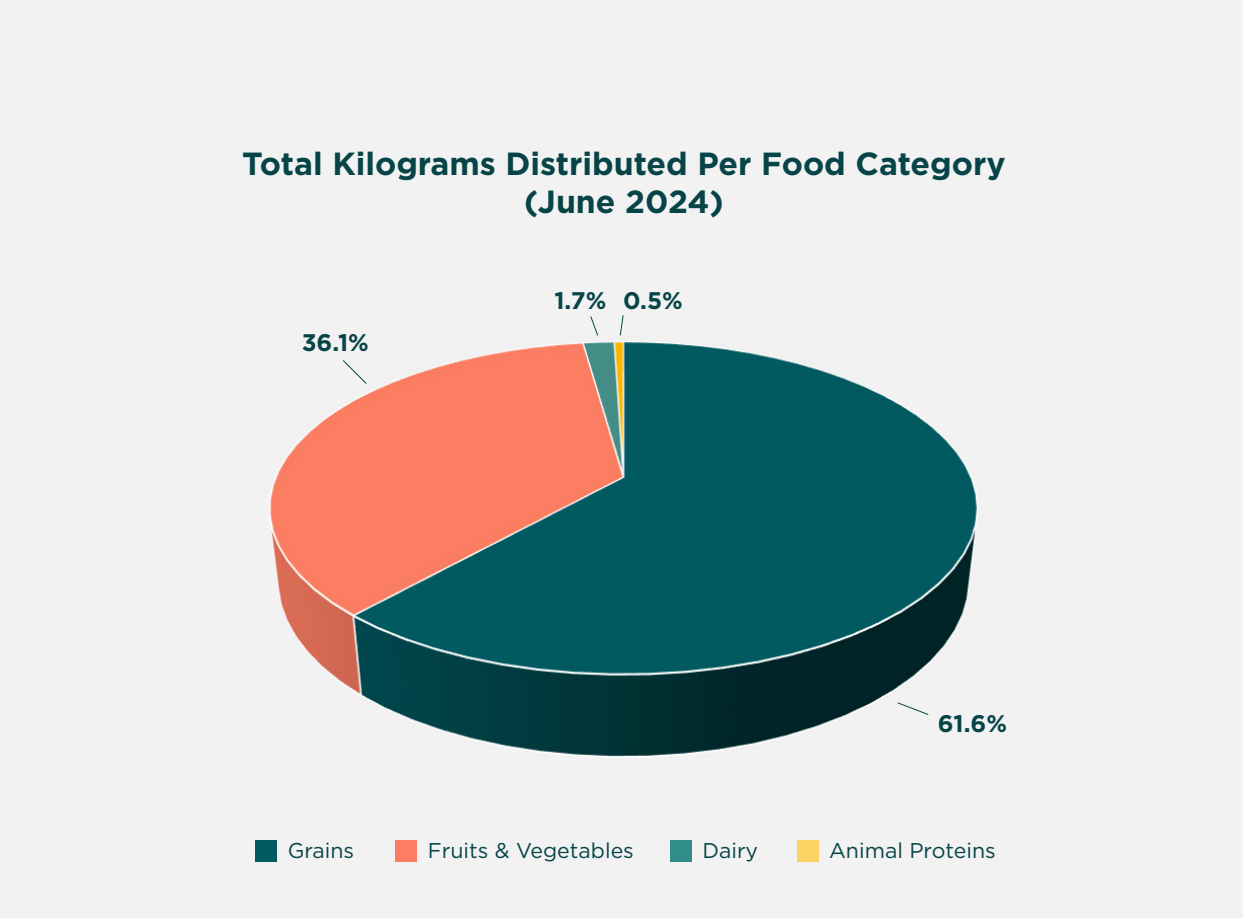

Figure 2 *- Percentage of food sourced per category. Agricultural recovery from smallholder (fruit & vegetable) representing 36% of all food distributed as of June 2024 (YTD). Note: the grain category refers to the fortified rice-soy meal packs from RAH's meal packing events hence not considered as part of agricultural recovery.*

RAHP Mini Food Bank at NVAT

The agricultural recovery focus at the terminal is mainly on vegetables produced by smallholder farmers up north of the island of Luzon. The type of vegetables and quantity varies depending on the farming season, with food available for recovery throughout the year.

Smallholder farmers who trade at NVAT have devised cost-effective ways of accessing the markets from the farms. For instance, to reduce the post-harvest cost of transportation and logistics to markets, farmers share the cost of hiring trucks to aggregate products and transport to the trading post. The sorting and grading of products at farm level is usually limited. This, coupled with mishandling during harvesting due to lack of proper equipment, leads to significant volumes of vegetables being rejected at the trading post. The Accenture study estimated that 50% of harvest is not sold at the trading post and discarded.

The process of disposing unsold products is costly for farmers, since they are charged a disposal fee that is significant relative to the income from the sales of their produce. Therefore, most farmers resort to returning the unsold products to the farms to discard them there as waste. This makeshift solution also presents a missed opportunity of backhauling by the vehicles hired by groups of farmers. Usually, the farmers plan to carry back useful and salable products back to the farms, e.g. farm equipment to sell and earn additional income. This means that every unit of unsold product is equivalent to a high opportunity cost and missed additional income for farmers. Hence, bartering the unsold vegetables for shelf-stable commodity is an economically viable solution for these farmers.

RAHP has two warehouses (775 and 750 square feet respectively) at the trading post for the purpose of bartering with farmers. The first warehouse is where fresh products are bought from farmers. RAHP targets class C and unsold products, which are used in prepared food kitchens.

The second warehouse has been racked/shelved and stocked with dry goods from RAHP's donated inventory typically shipped from RAHP's operations in Manila. Once farmers have sold their product to RAHP and received their voucher from warehouse 1, they come to this warehouse to redeem the value of that voucher for dry goods, which will be pre-priced based on donated value.

All the recovered produce is distributed to schools, with surplus only recorded during school breaks when demand significantly declines. To reduce the logistics pressure of having to have a quick turnover, RAHP has two chillers and a walk-in freezer to store perishable products recovered from barter with farmers.

About 10 meters from the food bank, NVAT has set up a juice factory, donated by the Department of Agriculture to the farmer cooperative. This factory, which is yet to be operational, is fully owned and operated by trading post. The operationalization of the juice factory will allow RAHP to barter more products, e.g. carrots, to get more raw material for processing. RAHP will then benefit from a "buy one, donate one" marketing strategy, which will see more nutritious and healthy drinks distributed to schools. This marketing strategy is also appealing to retailers from the perspective of good PR and CSR commitments to the communities they serve.

The Mechanics of the Barter

RAHP has set up a barter system that allows farmers to exchange fresh produce for other food items that would have otherwise cost them money. The aim of the barter is to further reduce post-harvest loss occurring at the terminal due to physical characteristics and grading requirements (for instance, making good use of edible fruits and vegetables considered "rejects" that are unfit due to cosmetic or other market standards).

Farmers can barter their unsold products with shelf-stable donations from manufacturers — commodities that farmers would ordinarily purchase. RAHP has a dedicated product sourcing lead for in-kind donations who manages relationships with manufacturers to steward shelf-stable product donations, which is the foundation for the continuity of the barter model at NVAT. The pricing of the fresh produce received from farmers is based on what has been established as the buying price, determined daily by the farmer cooperative at the trading post. RAHP exchanges produce with farmers based on the average price provided by the cooperative. On the other hand, the prices of the dry goods are set by the manufacturers at the point of donation. The manufacturer typically issues a certificate of donation to RAHP to accompany all goods donated. This guarantees exchange at that the manufacturer's predetermined price. The issuance of the certificate of donation is critical, as it allows the donor to claim a tax rebate from the government, a strong incentive for continued donation.

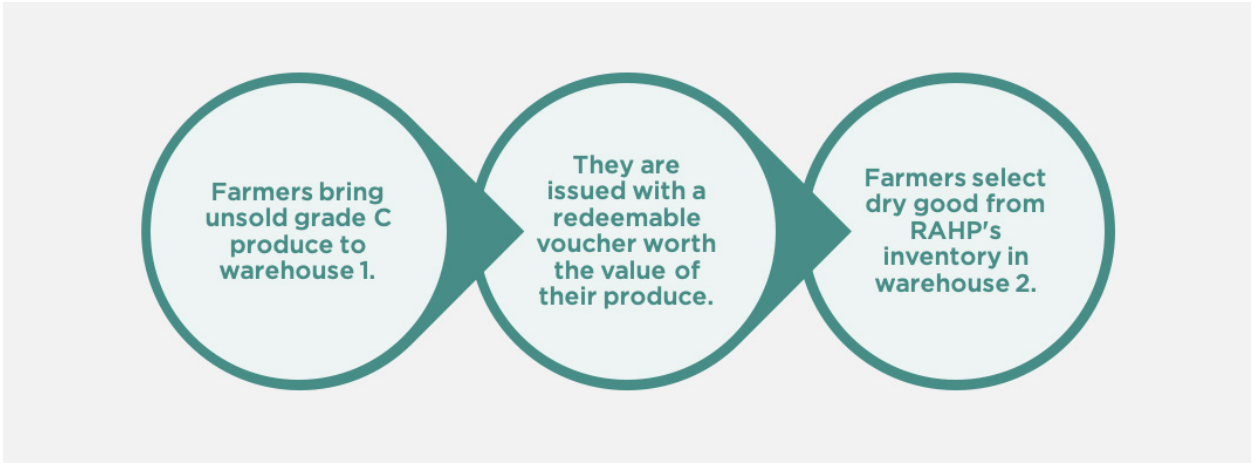

Figure 3 *- A simplified flow of the barter process at RAHP's mini food bank at NVAT.*

The barter process is based on a first-come, first-served basis until the desired volume is reached. The volume required is computed depending on what vegetable is available and how many of each of the vegetables would be needed to make meals recommended by RAHP's nutritionist.

Distribution of Recovered Products

Currently, RAPH recovers about 500 metric tons of unsold produce every day at NVAT. These are mainly vegetables assorted depending on what type is available during the different production seasons of the year. All recovered food is donated to 10 different elementary schools in Nueva Vizcaya, with about 500 students enrolled in each. Additionally, the students also take food rations (including vegetables) to their families, which means that the agricultural recovery at NVAT effectively reaches about 20,000 individuals.

To ensure that all recovered kilograms are utilized by beneficiaries, RAHP has a structured way of determining the volumes of vegetables recovered and distributed. They come up with a mix of different vegetables to create a recipe for schools and families depending on the availability of vegetables each season. RAHP employs a full-time nutritionist working closely with cooperative farmers to find out what vegetables are in season and comes up with recommended dishes. This then allows for the computation of how much of each vegetable would be needed per kilogram. The nutritionist also recommends a recipe every week — usually easy-to-make, local recipes.

Sometimes if there is surplus recovery from the barter and RAHP and cannot distribute all products at once because of perishability, the surplus is loaded onto third-party trucks back to Manila to be distributed to community kitchens. This mismatch in demand-supply is often heightened when schools are not in session, in which case all donations are transported to metro Manila to supply community kitchens.

Impact Assessment

RAHP's barter system with farmers at the NVAT trading post works with 50 farmers, targeting up to 120,000 kilograms of recovered vegetables every month and serving 5,000 school-going children.

For its NVAT operations, the food bank only relies on anecdotal reporting of the nutritional impact of its intervention in schools because their distribution to schools is not a fully designed school feeding program, and RAHP cannot attribute all outcomes to them supplying these schools. For example, by providing only 6 months' supply of vegetables while the full school term is 10 months, the continuity of intervention and outcome is lost after the sixth month. Furthermore, it is challenging to monitor the impact of the food rations taken home on eating habits, especially because the food packages are shared in making family meals.

Challenges and Opportunities

With an existing huge demand for recovered food both around the NVAT location and Manila, the prospects of recovering nearly 50% of food lost at NVAT remains feasible. However, there are potential barriers such as seasonality in harvest, extreme market volatility, extreme weather conditions and disasters.

The barter model is an easy-to-implement and easily scalable solution to post-harvest loss happening at the trading posts across the country. With investment in access roads to markets for farmers, barter would provide a last-mile post-harvest solution by creating mutual value for smallholders and food banks.

References

Barrion, A.S.A., Calayag, J.A.S., Nguyen-Orca, M.F.R. and Melo-Rijik, M.N. 2023. *Food loss and waste in the Philippines: a literature review*. Research Gate.