



# Circular Economy in Popular Markets

*Report on the Primero de Mayo  
Central Market's Pilot*

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## Introduction

According to data from the Quito Informa Agency of July 2023, the city generates an average of 2,300 tons of waste per day, only 1% of which is recovered by waste pickers who work under extremely precarious conditions to gather PET bottles, tetrapacks, plastic, cardboard, and other waste. Meanwhile, 60% of all waste is compostable material that comes from households, businesses, and markets.

San Roque is one of the main reception areas for the indigenous peoples who have been expelled from the countryside since the 70s, so it has been a key tie to rural-urban linkage. In the very same complex, the Primero de Mayo Central Market has operated since January 15, 1975, bringing together more than 150 traders of which more than 100 are herbalists engaged in the production, collection, and sale of edible and medicinal herbs.

This market is the first link in the distribution of medicinal herbs in the city, as it supplies intermediary traders from other markets in the sector and in the city. However, wholesale does not yield an advantage or higher profit. In fact, more than 85% of these producers earn less than minimum wage. Price ceilings are imposed by intermediaries, who increase the final price by up to 200%.

In this context, in 2022, the UNDP Ecuador Acceleration Lab coordinated a '[Community Innovation Minga](#),' which consists in co-creating and testing solutions to address challenges faced by medicinal herb vendors at the Primero de Mayo Central Market in Quito, together with students from the National Polytechnic University's Vocational Training School. As a result of several months of collaboration, 31 ideas were devised, of which 5 turned into functional prototypes and four were piloted, one of them related to organic waste management.

We now know that the problem of organic waste management can be turned into an opportunity through a circular economy model. Throughout 2023, the Primero de Mayo Central Market, with the support of Ecuador's Accelerator Lab, the Faculty of Civil and Environmental Engineering of the National Polytechnic School, and 'Marca Patito' enterprise implemented the pilot project for organic waste management with a circular economy approach to compost organic waste for both commercialization and personal use by the traders. Below, we present this pilot's results and lessons learned.



## Intervention site

The pilot was implemented in the Primero de Mayo Central wholesale market, located in the San Roque sector, on Chimborazo and Av. 14 de Mayo, in Quito. This market operates mainly on Tuesdays, Fridays, and Saturdays from 12 midnight to 8 in the morning.



Illustration: José Manosalvas



## Intervention phases



### 1 Waste characterization and quantification:

The first step was waste characterization and quantification. Any solution projection has to be based on data. Market waste is collected by a municipal collector that mixes organic and inorganic waste, therefore, there is no disaggregated data by types of waste. The contribution of two Vocational Training School (ESFOT) students from the Water and Sanitation Department was extremely valuable, as their thesis work focused on characterizing this market's waste. They systematically separated and weighed waste for 8 consecutive days through a validated methodology to obtain this data. Results are shown below..



**2 Decision making/ co-design:** Any intervention in waste management may encounter significant resistance since it implies behavioral change, as well as temporary storage for waste, which, if not done correctly, could bring more problems than solutions. Therefore, the idea of composting organic waste was closely discussed with both the market's Management Committee and traders to collectively build a solution that would address their concerns. After all, the solution mapping motto is "No solution without involving those concerned." As a result of conversations, installing a compost pen in the same market was ruled out, due to the vendors' lack of time to manage it and their skepticism about potential unsanitary effects. Consequently, for this pilot, it was decided to have a third-party composting service that would take care of the logistics and composting externally. In the co-design phase, assemblies and conversations were held, and a survey was conducted with 69 traders to identify waste management practices and attitudes in the market as well as to measure willingness for a potential pilot. In this process it was important to incorporate traders' participation from the initial phase to its implementation.

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**Awareness and training:** Personalized support and advice on waste segregation were provided to traders individually at their stands. We avoided holding workshops due to the demanding schedule that people in this market have. Feedback was based on waste observation to identify errors in waste segregation, motivating them to continue with this practice. In this phase, a coordinator was appointed, who stores organic waste from various stands in a 'community' sack. Likewise, the role of delivering sacks and monitoring the storage space was assigned to the guards, who already had a role in the end disposal of waste.

**Implementation:** As this was a pilot program, no substantial changes were made in the market's infrastructure or in the delivery of trash cans. It was important not to introduce too many elements in order to achieve specific yet effective changes. Our starting point consisted of the pre-existing practices that applied the use of bags or sacks. We provided reusable sacks, and in coordination with the Management Committee, defined a collection point. Our partner, Marca Patito, offered the logistics for this pilot. They collected organic waste sacks on Wednesdays for processing at a composting plant.

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**Recognition and compost delivery:** Finally, once the practice of systematic segregation, collection, and delivery of organic waste had been established, it came time to seek out feedback, both on results and lessons learned, as well as regarding the compost, now fertilizer. After nine weeks and a little over a ton of composted waste, Primero de Mayo Central Market's traders received 100 kg of fertilizer. Along with them, the management model will be fully adjusted to define the uses and redistribution of this resource that will be valuable for their crops.

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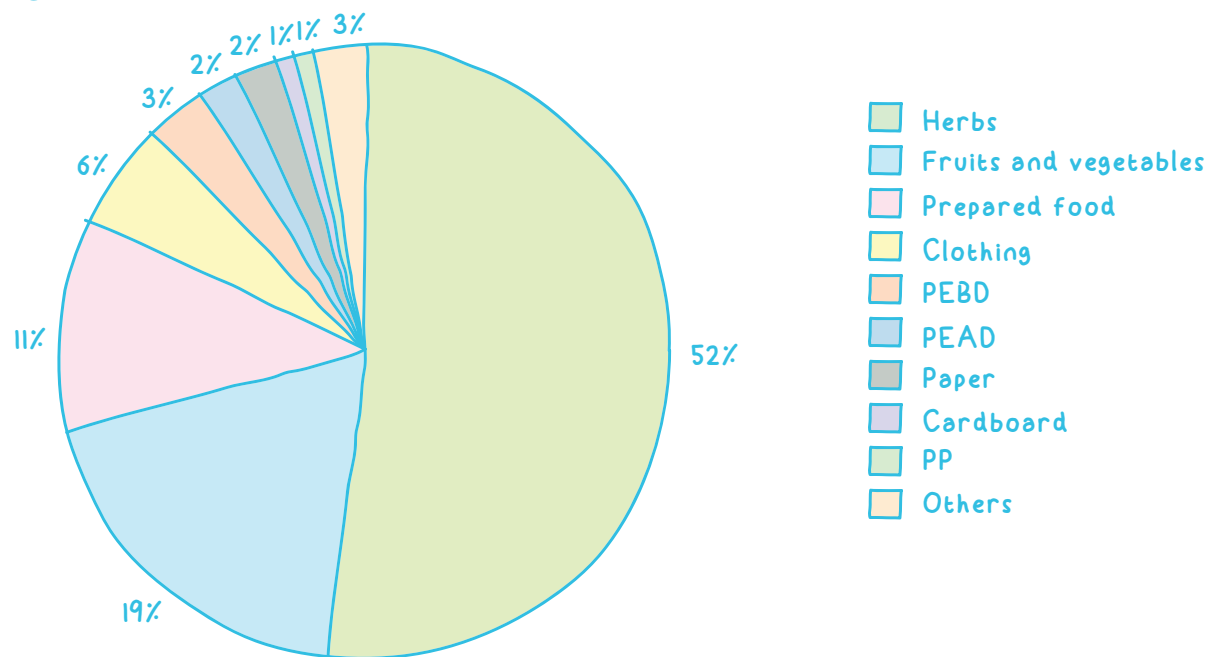


## Primero de Mayo Central Market Characterization

This market has around 170 traders, mainly women, dedicated to the production and commercialization of medicinal plants. To a lesser extent, there are fruit and vegetables stands, as well as others selling prepared food. Meanwhile, waste from textiles appears because this market's physical space is used during the day by people who trade second-hand goods. This pilot program is aimed at the market and its association, which is specifically dedicated to the sale of medicinal herbs, fruits, vegetables, and prepared foods, all of which are part of the Primero de Mayo Central Market Association.

### Waste composition of the 'Primero de Mayo' Central Market

Figure 1

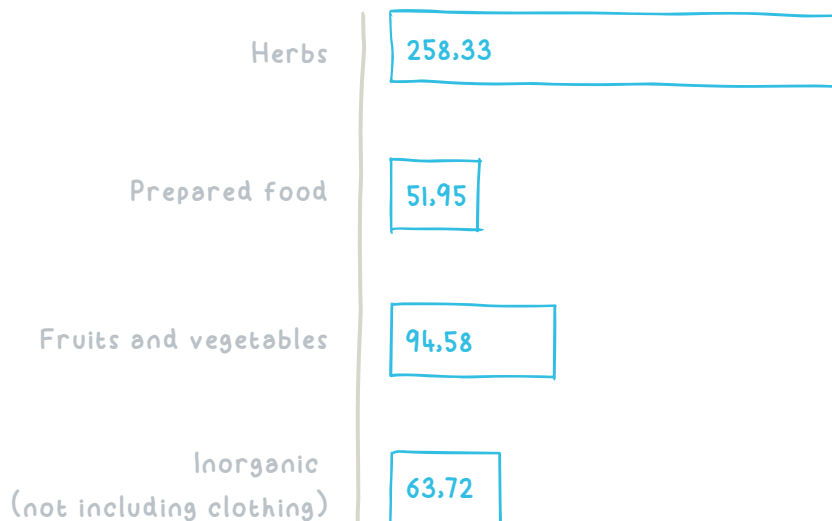


Data Collection: Alexandra Portillo and Jazmín Columba/ Prepared by: Paulina Jiménez

This data was obtained through daily weighing for 8 days carried out by two thesis students, Alexandra Portillo and Jazmín Columba from EPN ESFOT, who, to contribute to this project, carried out the characterization of inorganic and organic waste in this market.

## Waste generation kg/week

Figure 2



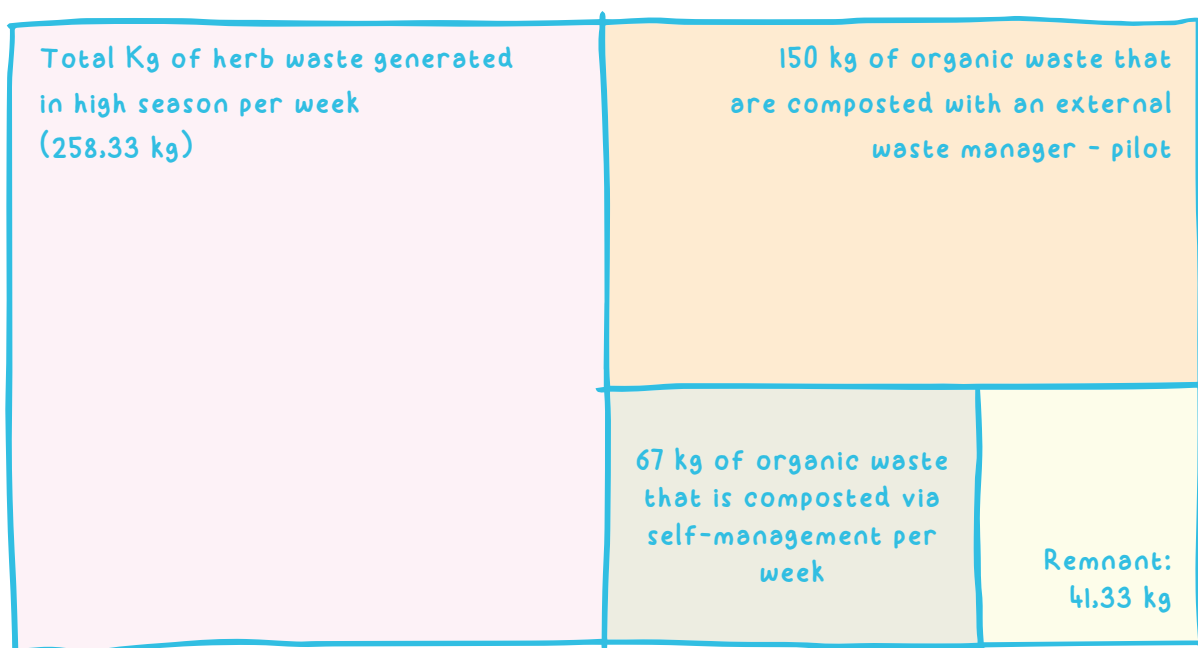
Data Collection: Alexandra Portillo and Jazmín Columba/ Prepared by: Paulina Jiménez

These results come from the measurement made in high season, where there is a higher influx of customers and products due to the rainy season. The organic waste management pilot with a circular economy model focuses solely on herb and plant waste because it is the largest volume component. Leftovers and food residue from prepared meals were not included because at most stands they already collect this waste to feed their animals.

During the pilot implementation phase, an attempt was made to involve as many traders as possible, achieving the results detailed below.

## Use of Organic Waste

Figure 3



Data: Alexandra Portilla and Jazmín Columba/ Prepared by: Paulina Jiménez

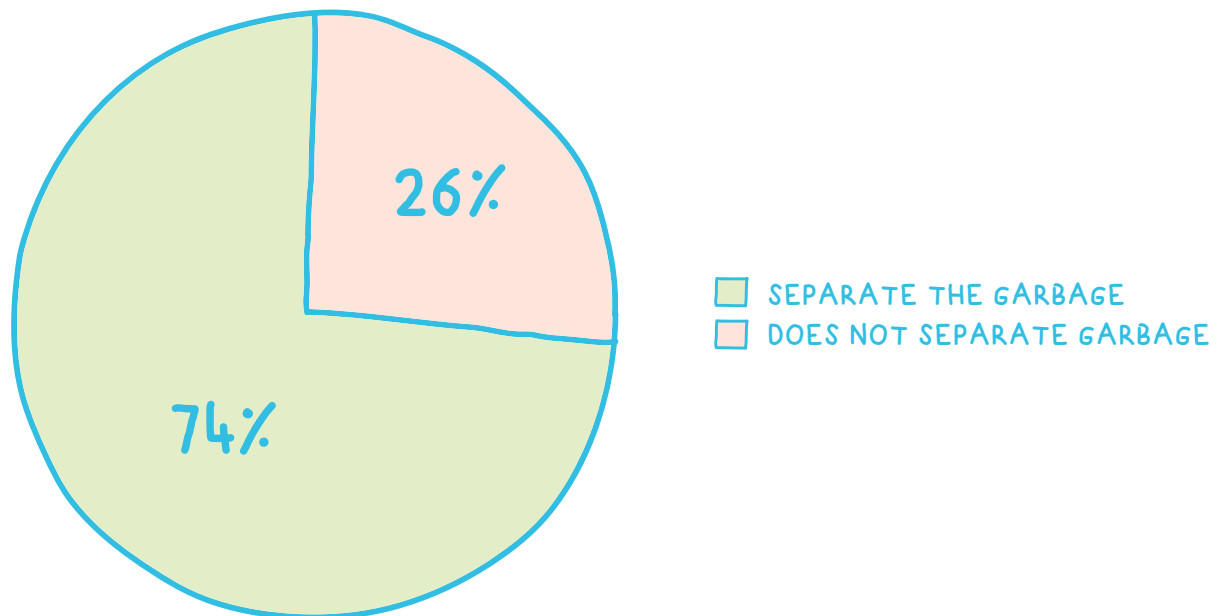
We can see that, out of the total organic waste from the herbs and plants section, 84% is being used for composting with the pilot program. The remaining 16% refers to the difference between the total waste generated taken from the characterization carried out in the high season and the composted waste. This difference is due to three factors that we have observed during implementation of the proposed model. The first one is the lower waste generation in low season, which happens in the summer months. The second, the lack of adherence to the pilot by some traders, and third, errors in the segregation where some organic waste bags were discarded instead of being delivered to the manager (Marca Patito). However, we can conclude that achieving 84% utilization of organic waste is a significant achievement in this market.

## Initial survey on views and attitudes

Before implementing the pilot, we measured the market traders' views and attitudes towards the organic waste management model proposal to identify possible bottlenecks to be resolved. A sample of 69 traders in the herbs and vegetables area were surveyed. This does not include answers obtained from the food court area since the pilot focuses on raw organic waste. Participation was voluntary and some limitations to involve the universe of traders in the first months of the pilot were due to irregular attendance caused by lower production and childcare obligations for children or grandchildren during the summer months. Results are shown below.

### Waste Segregation

Figure 4



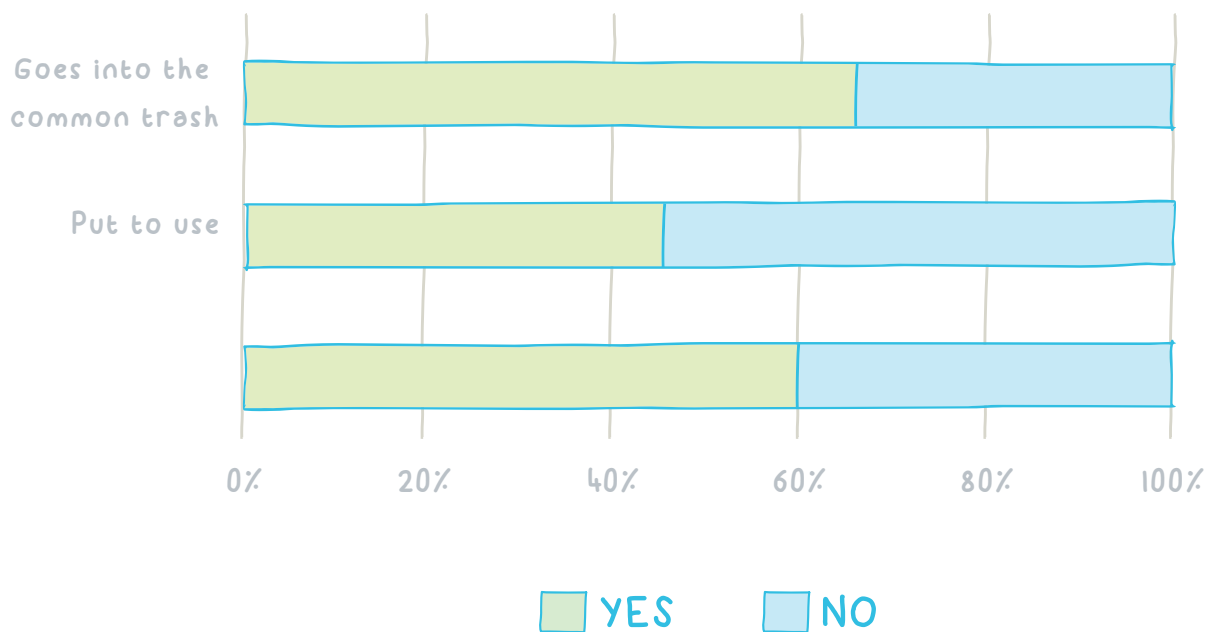




## Intention to change behavior

Are you willing to hand over your organic waste for composting?

Figure 6



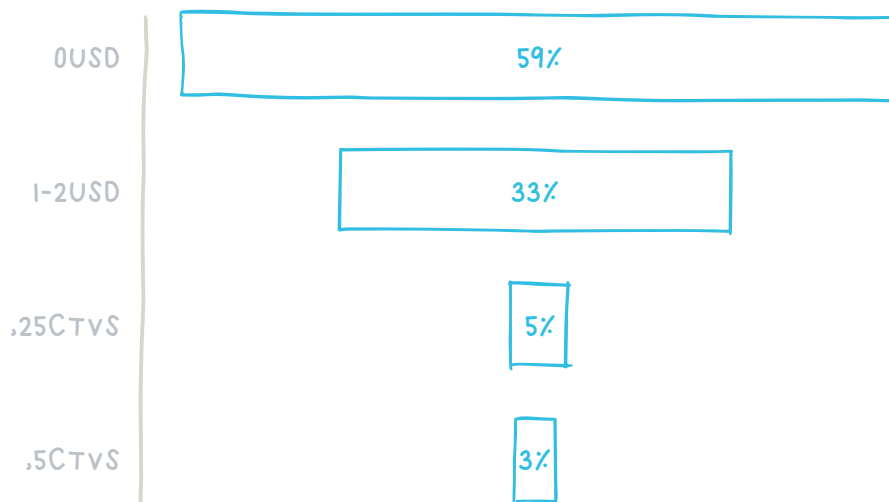
Data Collection: Alexandra Portillo and Dennis Caiza/ Prepared by: Paulina Jiménez



To identify opportunities and address resistance to change with the intervention, respondents were asked if they would be willing to give the waste to third parties for composting. A smaller number of people (16 people) refused to participate due to resistance to segregation. It is important to remember that the traders themselves had decided not to build a compost pen in the same market principally because of a lack of space, but further, because they lacked the time to take care of it. It is expected that these people will gradually join efforts once they realize that they will be compensated, whether through payment or via social recognition. The majority of those who did not make use of waste were open to the pilot project of giving it to a waste management specialist. Surprisingly, one group of people who segregate and make use of organic waste on their land were willing to hand it over to third parties. This is because transporting it implies an additional expense, make outsourced waste management more convenient for them.

When it came to outsourcing waste management, waste manager were mapped out was carried out and traders were consulted to see if they would be willing to pay for the composting service.

### Would you be willing to pay a certain amount per month for composting services?

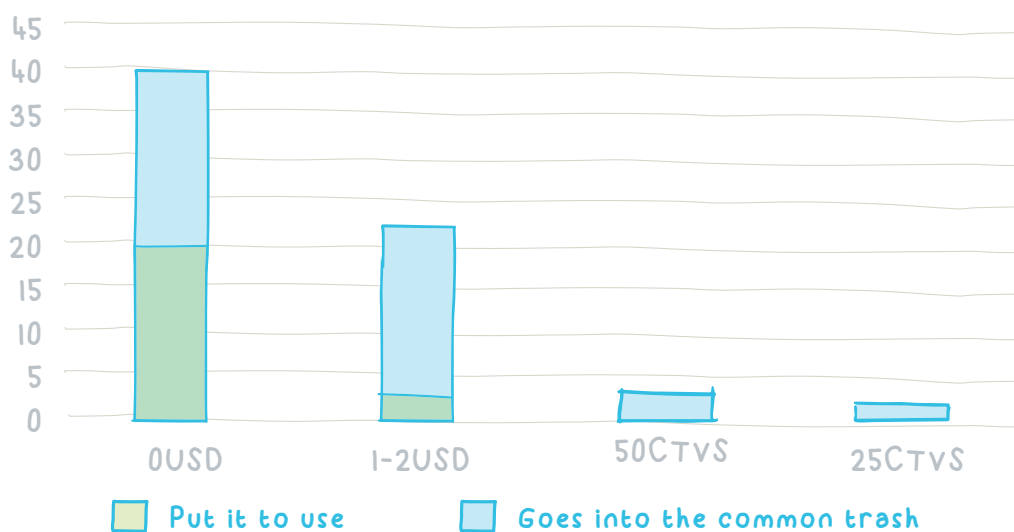


Data Collection: Alexandra Portillo and Dennis Caiza/ Prepared by: Paulina Jiménez

Fifty-nine percent said that they would not be willing to pay. Of this group, approximately half put their waste to use, which is why they would not be interested in a third-party service. However, the other half are small-scale traders who dispose of their organic waste and would not use a third party service because they do not see the benefit of their investment, as they lack vegetable and/or herb gardens where they could utilize the compost. In addition to this factor, the low incomes of sellers in this market must be considered as possibly the main barrier to outsourcing the service with private waste managers that require payments. This data is important when designing the management model and generating partnerships.

Figure 7

### Waste management and willingness to pay



Data Collection: Alexandra Portillo and Dennis Caiza/ Prepared by: Paulina Jiménez

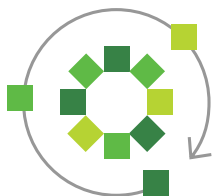


*On the other hand, it is noteworthy that those who are willing to make monthly payments ranging from 25 cents to 2 dollars per person are those traders who throw their waste in the common trash container. This group recognizes the benefit of receiving compost for their vegetable and/or herb gardens and avoiding losing their waste due merely because they lack their own logistics.*



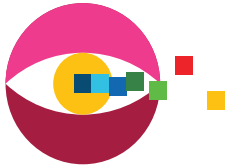
## Pilot Contributions

- Sixty three traders trained in waste segregation who replicate practices and motivate the rest of their peers to do so, as well.
- The pilot was able to segregate 1.3 tons of waste every eight weeks in low season. This amount has increased in the months of higher production - rainy season - and after delivering the fertilizer, the number of participants increased. Waste generation increased from an average of 115 kg per week to 205 kg per week.
- Organic waste utilization increased from 25% through self-management to 85% through a combination of self-management and external management. Participation in the project continues to increase.
- 115 kg of compost were produced in eight weeks, and this quantity is expected to increase with the creation of a self-managed composter by Marca Patito, in which the return would be higher (around 40%), since the current waste manager returns the equivalent of 10% of waste in compost.



## Sustainability

- Taking into account the fact that organic waste segregation is in itself a task for agricultural producers and vendors, composting services should ideally be provided free of charge through municipal management companies.
- Private composting services are a feasible solution for businesses with higher profits.
- In the case of the Primero de Mayo Central Market, a subsidized model is proposed through the private sector, namely through Marca Patito, to minimize the individual cost for logistics and composting services.
- The long-term and more sustainable model proposes municipal compost bins placed near those areas where markets and agricultural fairs are located.



## Lessons Learned/ Recommendations

- Wholesale markets where traders are producers who represent an opportunity to introduce the circular economy through organic waste management, as compost can be used for their crops.
- The organizational structure of spaces such as working-class markets favor the process of introducing new practices by having deliberative, assembly-based spaces for consultation.
- Waste management models must be designed and built participatively because there are beliefs, practices, and previous knowledge that could be an important starting point. It is a good idea to begin with good practices rather than introducing models which may well be ideal but also completely new for users.
- Herb vendors in this market have a strong environmental commitment, and this is due to their close contact with land, their crops, and their products.
- Waste segregation is a task that should be recognized through social and economic incentives in cases where livelihoods are precarious.
- When time is short for those involved, the project should be designed in such a way that it does not involve major tasks. Our recommendation is to teach by hands-on training, at each stand during the working day instead of using mass workshops or meetings.
- Being a pilot program, the investment in storage was minimal and reusable sacks were used as waste collection means to maintain already established practices.
- Participation should always be voluntary, and it is important to avoid creating divisions. Those traders who take their waste for use as food or compost in their homes are part of the project since the purpose is to use it either by their own means or by external management.
- A municipal composting facility could provide employment, and at the same time produce compost for local producers or to improve the livelihoods of those engaged in the circular economy. Pickers leave very little return margin after payment per kilogram to be processed, which can discourage people.
- It is recommended that municipal entities implement composting projects for families and urban and rural communities and thus eliminate the practice of traditional burning.





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