



ZERO WASTE CASE STUDIES
LATIN AMERICA AND THE CARIBBEAN
INTEGRAL SYSTEMS

Integral System for Waste Management: The Futaleufú Experience

GAIA unites 130 organizations in Latin America and The Caribbean, and more than 800 around the world that promotes zero waste, with the goal of building a society where the use of resources respects ecological limits, and where everything that is produced goes back into the productive system or back to nature in a way that is safe and environmentally and socially just.

When this is not possible, then said materials need to be redesigned or no longer produced.



November, 2019

Futaleufú

Population: 2,297. Surface area: 1,280 km². HSW per capita: 0.6 kg/day

Futaleufú, which means “big river” in Mapudungún-futa (big) lewfu (river)- is in the Palena Province, north of the Chilean Patagonia. Surrounded by natural wonders and with a terrain that makes it difficult to access, Futaleufú is becoming an example of how remote locations with small populations can manage their waste.

According to the data from Geociclos, Futaleufú’s objective is to reduce 60% of its household solid waste (HW), a municipal objective to be fulfilled by 2020, depending on the monthly advances of the program. A little over two years after implementing the waste separation program to achieve this goal, which involves 1,000 households, 36.6% of urban waste was recovered during 2018.

PROGRAM BEGINNINGS

In 2012, the first steps to manage solid urban waste (SUW) in the community started. First, they projected how they could separate household solid waste (HW) into three distinct categories and looked to European cities and neighboring Esquel, Argentina as examples because they already had similar programs in place.

In 2016, the Futaleufú municipal council approved an ordinance for the management of HW which led to the implementation of the **Plan for the collection of household waste** in 1,000 houses in the urban area. To execute this plan, they consulted Geociclos which for a year was responsible for providing containers, doing awareness campaigns, conducting environmental education activities in educational establishments and at municipal servant training events, and providing the collection teams needed to accompany the trial process.

PRIMARY CHARACTERISTICS OF THE WASTE PROGRAM

In Futaleufú, approximately 1.4 tons of solid urban waste are produced daily, in other words, 0.6 kg/person/day. In the initial characterization done by the consultancy firm Geociclos, the solid waste was made up of 52% organic material, 15% other waste, 9% sanitary waste, 8% glass, 7% plastic, 5% paper and cardboard, 2% metals, and 2% textiles. The short-term goal is to reduce the amount of household solid waste by 60%.

The plan for separate collection works under the municipal ordinance that establishes standards to foment and implement the management of household solid waste, which develops under the principles of individual and shared responsibility, prevention, participation, and sustainability.

Likewise, the municipality considers five pillars for the program's success:

1. Household waste separation

The program calls for the separation of three kinds of waste, which the municipality provides three containers per household for free, with a capacity of 40 liters for houses and 240 liters for shops.

- **Yellow container for recyclable material:** PET bottles, aluminum cans, tetra-pak, glass, cardboard, paper, and magazines.
- **Brown container for organic waste:** leftover fruits and vegetables, plant and gardening waste, yerba mate, ash, and dry leaves.
- **Grey container for trash (non-recyclable):** leftover household food waste, bathroom waste, inorganic waste, animal waste, and anything else not mentioned in the other two categories.

To this day, there have not been any actions incorporated for the collection of debris, appliances, and tires. Health-care waste is regulated by Order #6 of the Ministry of Health and those who produce hazardous and toxic waste need to comply with Order #148 of the Ministry of Health.

2. Selective collection

The collection of waste occurs in the urban areas between 8:30 am and 2:00 pm: on Monday, Wednesday, and Friday for non-recyclables, Tuesday and Friday for organic waste, and Monday and Friday for recyclables. In rural areas, there is not a complete implementation of the program yet, but the collection of non-recyclables is the same as the urban area and rural residents can take their organic waste and recyclables directly to the collection center.

The municipality counts on a truck for every separation and collects from every household only if the container does not exceed the total daily allowance of 40 liters for households and 240 liters for shops. If this does occur, a fine of approx. USD \$66 must be paid to the municipality for the service for every 100 additional liters.

3. Accountability

Even while the community has a high participation percentage, there are still households who do not separate their waste correctly. Consequently, there are auditors who take strategic routes to accompany the weekly collectors and to promote the compliance of the municipal ordinance.

Whoever does not comply with the municipal ordinance will first receive a warning and informative pamphlet on how to sort the waste and a schedule of when it is collected. However, if there is repeated non-compliance, the following and corresponding fines will be imposed:

- Minor of appx. USD \$33 - \$66: depositing waste in unauthorized containers, misuse of containers, putting out the wrong waste on the wrong dates, and the litter of wrappers, chewing gum, and cigarette butts on the ground.
- Fine of appx. USD \$66 - \$120: depositing waste without the correct separation, leaving debris, appliances, hazardous waste, and tires on public roadways or in containers designated for the program.
- Major Fines of appx. USD \$210 - \$350: leaving hazardous waste, car batteries, hospital waste, dangerous, toxic, or infectious materials in the public roadways or in containers designated for the program.

4. Collection at the Plant

In the second half of 2016, Futaleufú inaugurated the Center for Waste Management (CTI¹ in its Spanish acronym) 13 km from the town. The center has 29 hectares in total, five of which are used for the three treatment installations:

- 600m² shed where (HSW) recyclables are processed. Here, six operators depend on conveyor belts for classification, wrapping machines, and for compacting.
- 200m² shed to accommodate nine composting basins.
- Ditches for the final disposal of waste, these are 60m*9m*3m that comply with the stipulated sanitary standards for that type of waste.

According to the municipality, the success of the management and initiatives with the goal of reduction are fundamental in the case of Futaleufú, especially now that recyclables and disposable waste compete for the same space.

With compost, it goes back to the community because what is obtained from the organic waste is used to fertilize greenhouses and green community spaces such as lawns, plazas, and soccer fields. Some compost is given away to people who have signed up to receive it in the community, or to different fairs and activities that happen in the area.

1. Centro de Tratamiento Integral (CTI).

5. Diffusion

At first, information was spread in the town by going from door to door and hosting workshops at schools, health facilities and at the Municipality. Currently, there are two local radio stations and Facebook pages, one of the Municipality and another for “Futaleufú Waste,” which informs people about monthly statistics on recuperation, the calendars for waste collection, and serves to publicize the work that is happening in the Center for Waste Management (CTI). Conversely, in the municipality there is a tourism office and a library that have posters and registration forms to replace or request containers for waste separation.

In addition, there are recycling fairs in the plaza and guided tours for schools and neighborhood groups to the Center for Waste Management (CTI) so that they can see what happens to their waste. During the summer, there is an increase in tourists in the area, so the town hosts an environmental festival which shows bales of compacted waste in the Center for Waste Management (CTI), compost, and activities so that the tourists can understand the importance of the program and its mission to protect the local environment.

Furthermore, the community has taken up the responsibility of spreading knowledge about the program to visitors, and there exists a sense of pride in the people to be pioneers on this subject in the area. The conversations with people during the summary of the history of this report, suggests that the program is a way to keep the natural areas free from contamination, especially the Futaleufú and Espolón Rivers, which are the main tourist attractions in the area.

FINANCING

The Assistant Secretary for Regional and Administrative Development and the Regional Government for Los Lagos financed the Center for Waste and the Minimization Plan, for approximately \$1,300 million Chilean pesos (appx. USD \$1,860.00).

Currently the Futaleufú Municipality finances the maintenance of the Center for Waste Management (CTI) and the selective recollection through a common municipal fund. The transport of waste to recycling centers or waste vendors in the city of Puerto Montt, the largest city nearest to Futaleufú, does not represent a cost as it utilizes paper, carton, and aluminum as currency with the carriers that supply the town. This leads to significant savings considering that the distance between both places is 390 km and to travel from one place to another implies nearly 12 hours of traveling via highways and ferries, which comes to about 1 million Chilean pesos for every truck (appx. \$1,400 USD).

The collection of recyclable waste does not have a cost for the community; even so, there exists in all of Chile a charge for garbage collection that must be paid in April, June, September, and November. This garbage collection bill covers the cost for household waste collection, which is estimated to be between 0 - 60 liters daily; nevertheless, the charge does not cover the full costs of the system.

FINAL DISPOSAL AND RECOVERY

According to the data given by the municipality, in 2018 the total amount of SUW generated (between 430 tons and 495 tons/year), 36.6% (158 tons approx.) was HW that was able to be recycled or composted and 63.4% (2744 tons approx.) was non-recyclable waste.

When it is off season, the population stays around 2,300 people, and each collection is estimated to garner around 2 tons of recyclable waste and up to 1.2 tons of organic waste weekly.

When it is peak tourist season the population increases exponentially, making it grow to about 8,000 people, doubling the amount of waste and efforts to collect them. Taking this into consideration, between the months of December and February, every collection of recyclable waste consists of 4 - 4.5 tons and organic waste up to 3 tons weekly.

PROJECTIONS

Depending on what can possibly be collected and how it can sell in the market in Puer-to Montt, the municipality has estimated to increase the variety of waste that is collected, especially plastic waste. Still, knowing that in Chile the availability of places where certain types of plastic can be recycled is limited, the municipality is increasing its efforts to minimize the creation of waste. For now, there have been campaigns to collect electronic waste and car batteries.

In terms of the initiatives in place for the full use of the compost produced in the CTI, there are plans to have an organic produce farm and to create educational opportunities to depend on organic cultivation for one's own consumption.

Lastly, hopefully the plans to collect more types of waste in the town happen, but above all, that they stem from the goal to reduce waste overall, including the waste that is difficult to recycle or impossible to recycle, such as with single-use plastics. The expansion of tourism ventures based on displaying the natural attractions in the area, such as the Futaleufú River and the forests that surround the town, should be essential motivations to reduce waste creation and to advance its waste management plan so that Futaleufú establishes itself as the sustainable community it aspires to be.



