



# Funding Zero Waste in Your Municipality: 3 Steps to Success



Zero waste systems are the most cost-effective approach to waste management, while also contributing to reducing pollution and mitigating climate change. Furthermore, communities with zero waste systems produce a minimal and continually decreasing quantity of residual waste, depriving incinerators and other industrial-scale waste management systems of their feedstock. If every community practiced zero waste, then the incinerator industry would be finished.

To be successful, zero waste requires an “ecosystem” approach, wherein the multiple elements of zero waste are established and work together. Zero Waste Academies train people who can help cities make a transition to zero waste. A Zero Waste Network provides cities a way to connect with and learn from each other on their journey toward zero waste.

This is one in a series of guidance documents intended to assist cities and communities embark on their journey toward zero waste.<sup>1</sup> It focuses on funding: **how to assess and access funds to implement a zero waste system.**

Before taking a deep dive into the waste funding and financing world, one key observation should be made. Zero waste is a different approach to “conventional” waste management, which typically consists of collection, transfer stations, transportation and disposal in landfills or dumpsites in the outskirts of cities. Zero waste prioritizes waste prevention and decentralized systems that treat waste as close to the point of generation as possible. It puts people -rather than technology- at the center. It creates simple and less technology-intensive systems that offer flexibility for continuous improvement in the pathway towards zero waste. These fundamental differences in approach impact funding and financing options.

In decentralized systems, a municipality would typically have multiple small-scale facilities within its territory, where source-separated materials from a small, surrounding area would be stored, processed and even treated. This reduces transportation costs and emissions, as the distances are much shorter than taking all waste to the outskirts, and allows the use of much simpler (and cheaper) vehicles for these shorter distances. It also invests more in waste prevention -thus preventing municipalities from having to deal with an ever increasing amount of waste- and uses less capital-intensive methods that will be described later on. This means that decentralized systems pose many advantages in terms of funds required but it also brings challenges in finance options, all of which will be explored.

Although it is the most cost-effective approach to waste management, zero waste is not free. Anyone trying to implement zero waste must:

- **carefully consider the costs**
- **assess the ways to pay for it**
- **address the gaps between the two**

This document outlines these three steps to funding zero waste, and then presents the example of the Philippines, one of the foremost examples of how these steps have been put into action.



# STEP 1. ASSESS COSTS

How much will zero waste cost to enact in your community? You must answer this question in order to present a viable case for zero waste to city leadership, community members, and other key decision-makers. There will be two types of costs for zero waste: **1) startup (capital) costs** and **2) ongoing operating costs**.

**Startup costs** include the costs of setting up zero waste for your community, including building Materials Recovery Facilities (MRFs)<sup>2</sup> or sorting centers, organic waste treatment facilities, securing transportation for waste workers, and other capital expenditures. However, because zero waste is people-powered, startup costs are not just about equipment and infrastructure but also need to include education and outreach. Costs you will need to consider include:

**Construction of materials recovery facilities (MRF)** These facilities look different and have different combinations depending on the countries. Main variations include:

- sorting centers that process recyclable materials such as paper and cardboard, glass, metals (e.g. classify, shred, bale) to sell them to the recycling industry or intermediaries
- facilities that process recyclable materials, compost organics and temporarily store waste until transported to a landfill.

Associated costs include costs to build the facility, including storage and processing areas, toilets, office and all mandatory safety and health measures, equipment to store and process materials (eg. scale, manual tools), and office equipment (computer, furniture).

**Construction of small-scale composting and/or biogas facilities** including equipment to operate and monitor.

**Land acquisition** (if necessary) for materials processing facilities.

**Waste collection vehicles:** given the short distances in a decentralized system, these do not need to be large, expensive collection trucks or compactors, but could be vans, tri-cycles or rickshaws, carts or similar.

**Information, Education and Communication (IEC) campaigns** including posters, leaflets, comics, house-to-house education, community meetings, etc.

All vehicles and equipment undergo wear and tear, which is a reduction in their value and is called depreciation. These are also costs that should be taken into account. You need to calculate the lifespan of the item and divide the cost of the item for its lifespan, and that will give you the depreciation costs. For instance, a pushcart costs USD 1,000 and has a life expectancy of 10 years, you would have an annual depreciation cost of USD 100.

**Ongoing operating costs** include all costs that will recur every year once your zero waste system is up and running. Again, since zero waste is people-powered, these costs are less about equipment and more about wages and livelihoods. Costs to consider include:

- **Salaries and benefits** for waste collectors, MRF and organic treatment facility workers, admin staff, educators.
- **MRF and organic treatment facilities operation**, including basic services (electricity, water), equipment maintenance, replacement of tools, consumables (big bags, fire extinguishers, etc.), workers' uniforms and protective equipment, insurance (and other costs including license procedures), land rental (if applicable).
- **Ongoing Information, Education and Communication (IEC) campaigns** for updates and new residents.
- **Maintenance of collection vehicles and fuel**, if applicable.
- **Disposal gate fees** for residual waste and household hazardous waste.

Operational costs should be adjusted to economic variables such as inflation, variable interest rates and exchange rates (if applicable). To evaluate the financial sustainability of the system, it is recommended to estimate operational costs for at least 5 years.

Calculations should also include all sources of income the system may have, such as the sale of recyclable materials, biogas, or compost. These sources of revenue will reduce overall costs.

Try to obtain the most recent cost estimates for the desired municipality or neighbourhood for increased accuracy. As a guidance, costs based on a per capita basis and per ton basis are provided in the example of the Philippines (Annex A). Urban and wealthy areas typically produce more waste per person, resulting in higher costs for zero waste systems. At the same time, rural areas might have higher costs for transportation and have a harder time building efficient systems, so costs per person might be higher there as well, even though the waste generated per person is usually lower.

## Cost Comparisons

Most of the time, zero waste is not being proposed in a vacuum but is instead competing against a city's current waste management system or a proposed alternative such as incineration. It is important to secure the costs of these systems so that you can present them side-by-side when you are calling for zero waste. This comparison will only strengthen your case, as zero waste is extremely cost-effective.

In the event you have not yet been able to assess the costs of your city's current waste management or proposed alternatives, you might find the following information helpful. In this table, the capital expenditures for various waste systems are compared. Given that organic waste is over 50% of total municipal solid waste, the cost of composting systems *per se* is a driving factor.

**FIG 1. Capital expenditure of waste treatment technologies (USD / annual ton)<sup>3</sup>**

Waste to energy incinerators	600 - 1000
Anaerobic digestion	220 - 600
Windrow compost	40 - 60

Another way of demonstrating the economic benefits of zero waste is showing what happened in municipalities that are already implementing it. Fortunately, some municipalities that have started the transition into zero waste systems have estimated the savings from the new system. For instance, the city of Parma<sup>4</sup>, in Italy (population 196,518), has seen a reduction in the overall annual costs for waste management of €450,000 (over USD 500,000) after introducing a zero waste system. In northern Italy, the cost of managing residual waste in 50 municipalities oriented to a zero waste strategy is €178.9 (USD 201) per household / year, compared to the average cost in Italy of €245.6 (USD 276) per household / year, representing 27% costs savings through zero waste.<sup>5</sup> The city of San Fernando, in the Philippines (population 306,659), has reduced the annual waste management budget in Php 36 million (USD 705,700) after transitioning into a decentralized zero waste system.<sup>6</sup> The Philippine city of Tacloban (population 242,089), in turn, saved Php 21.6 million (USD 413,000) in their annual budget after transitioning into zero waste, representing 27% cost reduction.<sup>7</sup>

This cost comparison will already be a powerful tool to advocate for a zero waste transition in your municipality. Often local governments refrain from shifting their waste management systems because they do not have a clear sense of how that will impact their budgets. Presenting this information to them will add to making the case for zero waste.



## STEP 2. FIND FINANCIAL RESOURCES

Once you have a clear understanding of the costs to start and operate a zero waste system for your community, it is time to figure out how to pay for it. This section will walk you through the questions you should ask to get the financial resources you need for a zero waste system. Most likely, you will need to use multiple funding sources to cover the zero waste system, so you should explore all available options.

### 1. Does your city already pay for waste management?

If your city already pays for waste management, it is very likely putting its money toward a typical waste hauling system that collects waste and takes it to a centralized facility like a landfill or incinerator. In this case, strong arguments in favour of a zero waste system include reduced transport costs, operating costs of transfer stations, maintenance of sophisticated vehicles, landfill space, and gate fees at the landfill or incinerator. There are potential revenues that can accrue from the sale of recyclables and compost. Additional benefits accrue to society in terms of reduced healthcare costs, less transport-related emissions, and less clean up costs of the city's soil, water and air.

In cities that already have centralized and technology-driven waste management systems, the main financial barrier you will encounter to transition into a zero waste system is paying for the initial costs. Once set up, zero waste will be much more affordable than the conventional system, but overpaying for current waste management systems leaves cities without the resources needed to invest in new approaches.

### 2. Are there grants available to establish a zero waste model in your city?

In some cases, a municipality might have resources available for zero waste, but is reluctant to invest in a program it feels is unproven. Alternatively, a locality might not have any budget for waste management at all or is already dedicating its entire waste budget to collection and disposal. These municipalities will be in a much better position to procure the necessary funds when they see zero waste in action. Establishing a pilot program in one neighborhood might be a necessary step to demonstrate the practical and financial viability of the proposed zero waste program. If you can secure a grant or donation for model development, you will be able to get started and work to attract additional resources.

However, philanthropic funding is limited and cannot support widespread establishment of zero waste. It is best used to provide a clear demonstration of the workings of a zero waste system and the benefits that would accrue to communities. It would also be strategic to use the funds for elements that the city or community may not be willing to fund.

### **3. Can the city self-finance zero waste?**

At first, cities might have the impression that they cannot pay for startup costs out of their annual budgets. You could conduct research on existing fiscal and institutional mechanisms through which municipalities have the legal authority to borrow money. This can finance the startup costs and be paid back through the savings accrued by zero waste's long-term cost effectiveness.

A common source of finance in the U.S., municipal bonds can be issued to finance zero waste systems. Bonds are typically at least USD 10 million, so the city will need to be large enough or have costs high enough that this scale of funding is attainable. Because of the climate benefits of zero waste, the bonds might even be able to attain "green bond" status, potentially attracting more investors or securing additional benefits such as lower interest rates.

In many countries in the Global South, cities are unable to issue bonds. Even if they have the fiscal authority to do so, local bond markets are not established enough for these bonds to secure funding, or the countries do not have the necessary credit rating classification, or it may not be a smart decision to contract debts in foreign currency.

You should also check if any extended producer responsibility legislation exists in your country that cities could use to access private funding. In India, local governments can levy penalties on brand owners and manufacturers whose products cause post-consumption residual plastic waste.<sup>8</sup>

### **4. Is there national funding for waste management infrastructure?**

Understanding that cities frequently need to pay for initial infrastructure costs, some countries have funding set aside to help cities with this process. This funding tends to be a simple transfer, one-time funding that the city does not need to pay back. If this funding is available, it is likely to be more affordable than other forms of finance, and it could come with technical assistance specifically aligned with the purposes of the national fund.

Sometimes national funding is deployed through a national development bank or a municipal development fund, or is embedded in a variety of ministries grants programs (eg. dedicated to improve local infrastructure, labor inclusion, sustainable tourism). These entities do not necessarily specialize in waste management but might have specific funds earmarked for waste management projects. Issues of scale might come into play, but they

are unlikely to be as extreme as they are with other financial institutions.

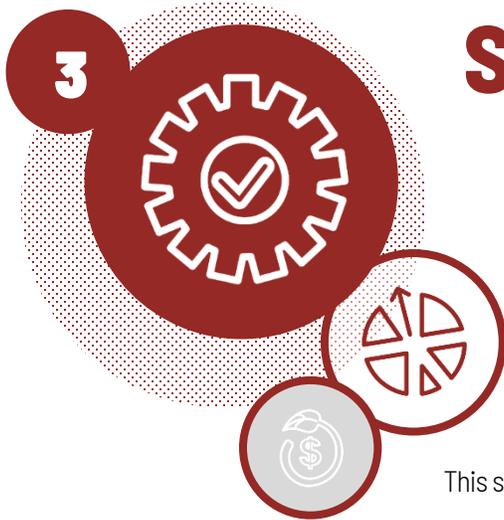
Another avenue to explore is to establish partnerships with the private sector. For instance, local commerce associations, paper, cardboard and glass chambers, producers and environmentally progressive businesses may be able to support the zero waste ecosystem by donating land, equipment or tools for MRFs. In India, businesses have a statutory obligation to donate a certain percent of their profits after taxes towards social welfare activities.<sup>9</sup> This is an excellent source of funds for non-profit organisations, especially pilots projects to establish the effectiveness and feasibility of zero waste programs. However, you should consider conflict of interests for each business before you approach them for funding. Advocating for taxes and mandatory extended producer responsibility policies is another way to secure funding for zero waste systems while incentivizing better product design to minimize waste. While it may take time to pass such policies, they would provide funding in the long term, and include accountability systems and more comprehensive requirements to prevent waste.

## **5. Can your city access international finance?**

International financial institutions like the World Bank have financed projects similar to zero waste systems in the past.<sup>10</sup> As with bonds, scale is important here; your zero waste system will need to cost at least \$10 million to start in order to make sense for international investment, and this can be unnecessarily large in many instances.

However, some international financial institutions agree on a multi-year country partnership strategy with the national government and deploy funding to national banks to be deployed in smaller amounts for waste management. You can check to see if this type of funding exists in your country and how you can make sure zero waste systems are included in the country strategies in the future.

You should also be aware that interest rates and other requirements included in loans - especially from international finance institutions - can compromise countries' macroeconomic sovereignty, so you should look carefully at the loan conditions, or find less restrictive sources in order to avoid contributing to economically unsustainable mechanisms.



## STEP 3. ADDRESS GAPS & ISSUES

As you work your way through the first two steps, you probably came upon one or more obstacles. Your next task is to remove these obstacles. This section discusses some of the issues you might come up against.

### What if my city's waste system is more affordable than zero waste?

Although zero waste is the most cost-effective solution to waste management, sometimes a city's current approach will seem like it is more affordable. Most of the time, these lower costs are due to cutting corners, such as dumping waste in open dump sites or refusing to pay waste workers living wages, a biased matrix of subsidies and so on. These seemingly low costs will bring extra costs to the city in the long-term, through increased health expenditure<sup>11</sup>, violation of labour rights, or damage done by pollution etc. In situations like these, it is even more important for advocacy efforts by GAIA members and other groups to highlight the benefits of zero waste beyond its cost-effectiveness, such as environmental health, community welfare, and so on, all of which result in savings in the overall cities' budgets.

In other instances, a city might be onto a cost-effective innovation that we could learn from. In these situations, please contact GAIA so we can assess the innovation and consider folding it into our zero waste model.

### What if my city does not have any budget for waste management at all?

Waste is a growing issue in rapidly urbanizing parts of the world, and it is no surprise that some cities have not yet set aside funding for waste management. You probably would not be considering zero waste systems for your city if waste was not an issue, and city officials are likely already aware of it as a problem for their constituencies. However, it typically takes firsthand experience for city officials to really “get” zero waste and commit to it both in principle and with funding. Here are some ideas for helping your city get on board with zero waste funding:

- 1.** A good starting point would be to assess the willingness of the public to pay for zero waste system components. In some municipalities, households pay a fee directly to the waste workers or informal waste workers associations to collect recyclables, organics or all waste. This helps cover the costs of part of the zero waste system that the government cannot pay, and may be a good starting point to bring results. It could also encourage governments to invest for zero waste systems with full inclusion of informal recyclers that includes fair wages and benefits.
- 2.** If there is a nearby city with a zero waste program, it can be effective to have officials from both cities engage with each other. In some cases, a competitive spirit will take hold, and your city will leap forth with a commitment to zero waste so as to keep up with its neighbor!
- 3.** Another way to take advantage of existing models is by approaching the governance layer in between different cities and central government (e.g. provincial or state governments) inviting them to see the zero waste model and working later on to replicate or scale up through regional facilities.
- 4.** GAIA members can arrange for municipal officials to undertake study tours at one of the model Zero Waste Cities.
- 5.** Share successful experiences of cities with similar constraints. For instance, the city of Tacloban in the Philippines was only able to service 30% of households in the city with its waste management budget. Thanks to implementing a zero waste strategy, the city was able to improve its reach to 100% of households, without significantly increasing its waste management budget.<sup>12</sup>
- 6.** Start a zero waste model program in your own city. Although grant funding is limited, getting zero waste going in just one neighborhood can sometimes be all it takes to help a city see the benefits of zero waste. Partnerships with local public research institutes, universities, and other local institutions or businesses could help in fund allocation for these pilots.

Keep in mind that even with full commitments from a city to start paying for waste services, which can be funded by taxes and tariffs that scale to the costs of the system, they might still have an issue with the startup costs.

## More resources on waste finance

- [Circular City Funding Guide platform](#)
- [Finance toolkit: an introduction](#). ICLEI - Local Governments for Sustainability , UN-Habitat Transformative Actions Programme (TAP), Urban-LEDS II project, 2020.
- [How to finance urban infrastructure](#). C40 Cities Climate Leadership Group and GIZ, 2017

# Annex: Example from the Philippines

GAIA members in the Philippines have been on the cutting edge of zero waste solutions for years. They have led the way in pushing for zero waste throughout the island nation. However, despite an enabling policy framework, funding for zero waste still seems to be an obstacle for many cities. This section walks through how the 3-step process described in this document pertains to the Philippines.



## STEP 1. ASSESS COSTS

Due to a variety of model zero waste programs happening throughout the country, members in the Philippines have quite a bit of cost data to draw upon when making future estimates for how much new zero waste systems will cost.

Typically, decentralized zero waste systems in the Philippines have one material recovery facility (MRF) per *barangay* (neighbourhood) of 10,000 - 20,000 residents. While the size of the MRF varies, the recommendation provided is that, whenever possible, land for MRFs should be above 100 square meters.

Collection is done with tri-bikes (tricycles that carry bins to store source-separated materials), and each vehicle has two workers: one pushes the cart, another one collects the materials and puts them in the designated bins inside the cart. Occasionally there is a third person who monitors the daily collection. Each collection pair services between 400-600 households.

The example below draws only from one small sample to illustrate the process.

The following tables show the initial startup costs and ongoing operating costs for zero waste in Maimpis, a *barangay* (neighborhood) of 9,441 residents within San Fernando city.<sup>1</sup>

**FIG 2. Startup Costs for Zero Waste in Maimpis**

Amount (PHP)	Item
600,000	Land acquisition
150,000	MRF construction
1,200,000	1 truck
113,600	Tri-bikes and bins
40,000	Early IECs
2,103,600	TOTAL
\$41,239	Total in USD <sup>2</sup>
\$4.37	Per capita (USD)

**FIG 3. Ongoing Operating Costs for Zero Waste in Maimpis (Annual)**

Amount (PHP)	Item
611,600	Salaries <sup>3</sup>
123,300	MRF operation
1,700	Ongoing IEC
736,600	TOTAL
\$14,440	Total in USD
\$1.5	Per capita costs (USD)

When looking at the entire city of San Fernando, the annual budget for the zero waste system is PHP 34.6M (USD 678,000); USD 2.21 per capita per year.<sup>4</sup> This is substantially lower than years before the zero waste system started, where costs were up to PHP 70M (USD 1.4M).

Taking it a step further, GAIA members in the Philippines use a general estimate of 0.59 kg of waste production per person per day, that is 0.215 tons per year. Considering that, zero waste's operational cost per ton is approximately USD 7.11 in Maimpis. As described earlier, estimates like this can be very useful when compared to other costs, showing zero waste's cost-effectiveness.

## STEP 2. FIND FINANCIAL RESOURCES



GAIA members in the Philippines have worked hard to find ways to fund zero waste systems throughout the country. Below is the status of their efforts in answering each of the questions you should be considering as you seek financial resources for zero waste systems.

- 1. Does your city already pay for waste management?** In the Philippines, every city is required to include funding for waste management in its budget. While there are some issues with cities *actually* budgeting for waste management (versus just saying they are funding it), in many cases funding is there. Solid waste management programs are often self-funded by municipalities through their respective annual internal revenue allotment (IRA). IRA comes from the national government, which distributes municipal budget shares based on population. Some cities, especially in urban hubs, also earn from taxes from local businesses, in addition to IRA allocations. Many cities spend considerable amounts of money on waste management, creating a clear source of funding for the annual operating costs of zero waste once it is established. However, since this funding is currently tied up in paying for less cost-effective waste management measures, some cities are not able to afford the startup costs for zero waste. There are some exceptions, such as Taguig City - one of the business districts in Metro Manila - that contracted Mother Earth Foundation to help develop its Zero Waste Program without the need for grant support. In many other cases, external finance is required for

start up costs, while operational expenses can be covered by existing budgets. In addition, low-income municipalities that do not have a lot of economic activities (ergo, more tax revenues) only rely on IRA allocations, which are not enough to roll out a proper set of Zero Waste strategies.

- 2. Are there grants available to establish a zero waste model in your city?** GAIA members in the Philippines have been able to secure significant grant funding to start zero waste models in multiple locations throughout the country. In numerous instances, these models have inspired other cities to commit to zero waste goals. However, grant funding alone cannot pay for all of zero waste's startup costs; GAIA members estimate that the current level of support would require 1500 years to get the whole country to zero waste!
- 3. Can the city self-finance zero waste?** Local Government Units (LGUs) in the Philippines have the authority to issue bonds, but "there have only been a handful of LGU bond issuances".<sup>5</sup> These bonds—like the Tagaytay City Tourism Bonds<sup>6</sup>—have typically been at least PHP 200 million (around USD 4 million). Since our startup costs are roughly USD 4.37 per person, only LGUs with almost 1 million residents are going to be able to consider this option.
- 4. Is there national funding for waste management infrastructure?** Fortunately, the same national law that requires cities to set aside funding for waste management (RA 9003) also established a national fund to help LGUs set up waste management systems. However, after nearly two decades, this fund remains empty, providing no recourse for cities that want to invest in zero waste. There might be other options, such as the Green Financing Program of the Development Bank of the Philippines (DBP)<sup>7</sup> and the Municipal Development Fund Office (MDFO)<sup>8</sup>, both of which are tasked with financing local solid waste management projects. The latter has been used by some LGUs to acquire infrastructure and equipment such as shredders, collection trucks, so it can add to the finance pool required for start-up costs. Still, there are concerns over the political nature of these entities, such that they might not be options for any given LGU in the Philippines. There might also be issues of scale, but this has yet to be investigated.
- 5. Can your city access international finance?** International financial institutions (IFIs) like the World Bank and the Asian Development Bank are no strangers to financing waste management in the Philippines, but their support has typically been for large-scale solutions like landfills<sup>9</sup> and incinerators.<sup>10</sup> Although there is the potential for these entities to support zero waste, it will require further engagement and campaigning. In addition, the scale of the project would need to be large enough for them to invest in. However, it might be possible for these entities to coordinate with national banks to create opportunities that aggregate the needs of multiple LGUs or entire regions into one large-scale project. For example, in 2003 GIZ established a credit line with DBP that financed 15 waste management projects with an "average value of EUR 100,000"<sup>11</sup>, which is much more in line with the scale of zero waste system startup costs. That said, the relationship on a local level is likely to manifest itself through a national bank rather than directly with an IFI, taking us back to whether entities like DBP and MDFO are viable options for LGUs.



## STEP 3. ADDRESS GAPS & ISSUES

GAIA members in the Philippines have done a great job advancing zero waste as quickly as possible. Zero waste is an increasingly visible and popular option for waste management, and the waiting list of cities wanting to switch over to zero waste is beyond current capacity. One of the main obstacles continues to be funding, as cities do not have the resources to pay startup costs, regardless of their current budget for waste management. GAIA members are therefore targeting the creation of a Zero Waste Transition Fund that cities can access to help pay for these costs. However, before establishing such a fund, it will be important to answer the following questions:

- 1. Are currently established options, such as DBP's Green Financing Program, off the table?**
- 2. The GIZ fund for waste management (through DBP) had low repayment rates from cities. In what ways would a new Zero Waste Transition Fund be any different?**
- 3. Are local banks willing to extend small scale and affordable loans to cities? Will cities be required to provide sovereign guarantees? What will be the impact on the municipal budget?**
- 4. What additional hurdles will cities face in getting a loan from a Zero Waste Transition Fund housed at a commercial bank, and will these hurdles hamper the deployment of funding and uptake of zero waste systems?**

## References

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  2. Materials Recovery Facilities typically include a space to store and process recyclable materials to be sold for recycling or sent to a larger facility for further processing, compost organic materials and store residual waste before being sent to disposal, as well as facilities such as an office and toilets. They also serve as drop-off centers, and often include vegetable gardens where part of the compost is applied. In the decentralized zero waste systems in the Philippines, this works all together in the same facility, and there would be multiple MRFs in one city, serving the surrounding neighbourhood.
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  15. Includes salaries for 6 waste collectors (PHP 360,000), MRF supervisor and truck driver (PHP 221,600) and palero or helper (PHP 30,000).
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GAIA is a global network of more than 800 grassroots groups, NGOs, and individuals. We envision a just, zero waste world built on respect for ecological limits and community rights, where people are free from the burden of toxic pollution, and resources are sustainably conserved, not burned or dumped. We work to catalyze a global shift towards environmental justice by strengthening grassroots social movements that advance solutions to waste and pollution.