ZERO WASTE: the cornerstone of a sustainable circular economy

Zero waste is a policy, a path, a target. It is a process, a new way of thinking. Most of all it is a vision. It represents a new planning approach for the 21st Century encompassing the principles of conserving resources, minimizing pollution, maximizing employment opportunities, and providing the greatest degree of economic self-reliance. Michael Jessen, *Discarding the Idea of Waste: The Need for a Zero Waste Policy Now*

What is Zero Waste?

Zero Waste is an innovative approach to the use of our resources which ensures resource efficiency, resource recovery, and protection of scarce natural resources.

It redesigns the unsustainable “business-as-usual” one-way, linear industrial system into a circular system that minimizes unnecessary extraction and consumption, reduces waste, and ensures that products and materials are reused or recycled back into nature or into the market.

At the heart of this approach is an emphasis on the relationship of all sectors of society with the resources, materials and products they use.

Zero Waste systems protect the environment and public health, help communities and cities build robust local economies, generates productive jobs and livelihoods, and help mitigate climate change. It is an integral part of a green, circular economy.

Zero Waste International Alliance defines Zero Waste as:

> A goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use.
>
> Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them.
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> Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health.

What is the difference between Zero Waste and conventional waste management such as landfills and incinerators?

Zero Waste and land-filling/incineration are two opposite paths to resource and waste management.

To give an analogy: if waste were a sickness, Zero Waste is medicine that treats the cause of the sickness. Conventional approaches merely treat the symptoms, without curing the sickness itself.

Zero Waste is similar to turning off the tap. For example, if your faucet is broken, fixing the faucet to stop the water from leaking is the Zero Waste approach. Merely putting a bucket under the tap, and constantly replacing the bucket or emptying it is the analogy for disposal approaches such as land-filling and incineration or so-called "waste-to-energy" (WTE) incineration.

Zero Waste	Conventional approaches (landfilling/incineration)
Focus is waste prevention • Addresses the root cause of the problem	**Focus is waste disposal: end-of-pipe** • Addresses the consequences of the problem, instead of the root cause
A 'whole system' approach • Addresses the whole lifecycle of resources and products, and how they flow through society • Zero Waste includes society working towards redesigning products and delivery systems to ensure waste is minimized and the value of the product or its packaging is extended; and redesigning products and packaging in order to phase out toxic components.	**Concerned only with disposal** • Not concerned with extending the value of materials or products, redesigning products or phasing out toxic components
Part of a sustainable circular economy • Reduction, reuse and recycling--ensuring nothing goes to waste--is the central principle of a sustainable circular economy. • Encourages the responsible use of natural resources and moving away from an extractive economy	**Part of a linear economy that is now recognized as unsustainable** • Landfills and incinerators are the end fixtures in an economic model that does not value circularity, i.e. extraction-production-disposal, or the "take, make, dispose" model. • Encourages the continuous extraction of natural resources and the creation of waste
People-centered • Addresses waste issues in the context of related social and environmental issues • A way of dealing with resources, materials and products that involves all sectors of society, in a way that builds networks and encourages good governance when it comes to the relationship of all these sectors with waste. Also takes less than a year to set up	**Facility-focused** • A one-dimensional mechanical fix • Facility-focused and involves huge, capital-intensive structures operated by private-sector companies • Encourages the "out of sight, out of mind" attitude toward waste • Takes at least three years to construct, excluding proper consultations with target host communities, construction delays and technical preparations

What does a city/municipality/barangay need to do to go Zero Waste?

Zero Waste provides a set of guiding principles that enable an entity (whether an individual, household, institution, village, municipality, city, province or country) to continually work towards reducing, and eventually eliminating, waste.

Usually, the first step is for the city/municipality/village to commit to work towards Zero Waste, and to come up with an action plan on how to go about this. The commitment also involves developing policies and systems to support the path toward Zero Waste (for example, at-source segregation, plastic bag bans, bans on disposable plastic and stryrofoam products, etc), and earmarking resources to set up and sustain the system.

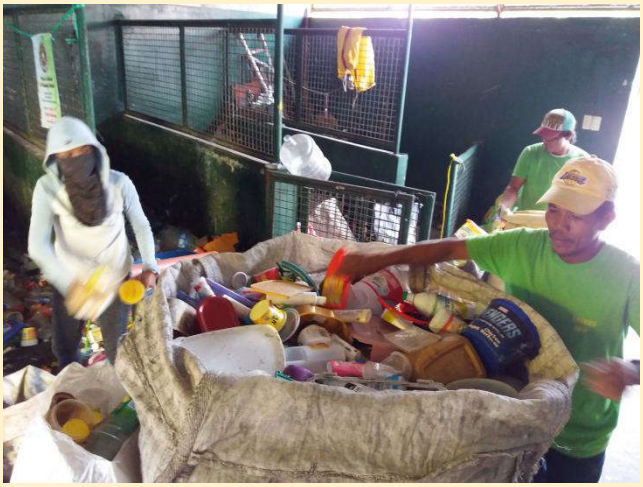
It helps to have a national or local policy in place which supports Zero Waste systems; local governments only need to set up a system, as well as an extensive education and information communications programs, to enforce it.

With strictly enforced at-source segregation and a ban on single-use plastics, a city or municipality can already drastically reduce the amount of waste collected for conventional disposal.

For example, a city that enforces strict segregation of organics from non-biodegradable waste, can already reduce the amount of waste collected for conventional disposal (i.e. landfill) by at least 60%. (In Asia, the average portion of organic waste in collected municipal waste is around 60-70%.) The organics can then be composted and used to enrich the soil. Segregating waste will also increase the recovery and quality of recyclable and reusable materials, drastically reducing the amount of waste sent to landfills.

The next step can then be bans on unnecessary single-use disposable plastic products such as plastic bags, plastic straws, cups and cutlery, etc., which will further reduce the amount of waste generated.

One thing to remember is that there is no one-size-fits all approach for cities and municipalities for Zero Waste systems. A city or municipality needs to apply Zero Waste principles into the local context.



Clockwise from left: Pedal carts used for door-to-door waste collection in Bgy. Portero, Malabon City (ZeroWasteWorld.org); Waste workers inside a materials recovery facility in a village in the City of San Fernando, Pampanga prepare recyclables for collection (ZeroWasteWorld.org); City of San Fernando, Pampanga Mayor Edwin Santiago awards model barangays for Ecological Solid Waste Management to give incentives to villages with best Zero Waste practices (City of San Fernando website).

In terms of benefits, how does Zero Waste compare to incineration and so-called "waste-to-energy"?

Zero Waste	Conventional approaches (landfilling/incineration)
Economic benefits • Savings for cities and municipalities One example is the City of San Fernando in Pampanga, Philippines. Without Zero Waste efforts, their cost for waste management would be equivalent to around USD 1.3 million annually on solid waste management costs. With Zero Waste, the local government only spends around USD 230,000--and the city has never been cleaner! • Sustaining a Zero Waste system requires less financial resources compared to maintaining an incinerator or WTE facility.	**Economic losses** • Prohibitive capital costs for construction--and even higher capital costs for the facility to control pollution according to legal standards • Financial lock-in for at least 30 years • Money goes to the private sector operator, instead of the local government. • Operation and maintenance of incinerators cost 10 times more than that of coal plants, and 4 times more than nuclear facilities.
Reduces pollution • Eliminating waste also eliminates pollution. • Segregating organics from non-biodegradable waste, and using organics for composting or anaerobic digestion is key to stopping methane emissions in landfills. • Reducing plastic production and consumption reduces plastic pollution in nature. • Ensuring products are produced without the use of toxic components means that they will never be a source of harmful pollution.	**Produces harmful pollution** • All incinerators (regardless of size or cost) produce toxic pollution--notably cancer-causing dioxins and furans, as well as fine particulate matter. • Incinerator emissions vary depending on the pollution control systems used and the infrastructure. Pollution control mechanisms typically make up at least half the cost of the incinerator upon construction, and, as with the rest of the facility, have to be maintained and its consumables (e.g. filters) replaced. • It is common for incinerator companies to reduce the cost of the incinerator construction to make it attractive to municipalities--but they do this by removing or downgrading pollution control mechanisms, to the detriment of public health.
Creates jobs • Zero Waste approaches value the role of people within a Zero Waste system. Its decentralized approach to waste management creates safe, green jobs for millions of waste workers globally.	**Takes away jobs** • Incinerator facilities take jobs away from people who need them most. Waste workers will have no jobs in a system that uses incineration. In fact, incineration creates very few jobs, and its workers are subjected to the occupational hazards of working in a dioxin-producing facility.
Protects the climate • Zero waste is proven to be one of the fastest and easiest ways to mitigate climate change. It conserves resources and thus reduces the need to extract finite resources and use up resources to constantly replace materials that are being lost through disposal.	**Harms the climate: not renewable energy** • Waste comes from finite sources such as fossil fuels and forests. Waste is not renewable energy. • Incinerators produce more carbon dioxide per megawatt hour than coal-fired power plants. • It creates the need to extract more resources and to create more materials--both processes are fossil fuel intensive.

Clearly, incinerators and “waste-to-energy” incinerators are harmful and ineffective. Burning waste has many negative health, environmental, social, and economic consequences. Incinerators threaten human health, pollute our air, land and water, harm our economies, contribute significantly to global warming, and fuel an unsustainable system of consumption and wasting.

“Waste-to-energy” through incineration has also been proven to be the most expensive, most polluting, most energy intensive and most inefficient way to generate electricity. Many examples of the failures of incineration around the world show that “waste-to-energy” facilities neither address waste nor energy.

At present, some municipalities and cities claim that incinerators are “needed” because sustainable solutions such as segregation, composting etc are “hard” to implement. This kind of reasoning reflects a lack of vision and lack of motivation to innovate. In contrast, innovative and visionary local government leaders around the world, including in Asia, are already taking the path to Zero Waste.

Current global developments are showing us that developed countries that have previously relied on incineration are now shifting away from it. Europe, home to some of the most advanced waste burning facilities in the world, has taken the first step to phase out incinerators. The impetus for this change was the European Union Action Plan for the Circular Economy. A circular economy is “one in which the value of products, materials and resources is maintained for as long as possible, minimizing waste and resource use.” In January 2017, a European Commission communication on the role of “waste-to-energy” in the circular economy has advised member states to issue a moratorium on new incinerators, decommission old facilities, and phase out public support and subsidies for incineration.

Globally, there is a strong move away from incineration and towards Zero Waste. In the US, there was a 20 year hiatus in incinerator construction due to resistance from the public, health risks and high costs. No new commercial scale incinerators have been built since 1997 due to high costs, health risks and resistance from the public. Stronger waste reduction and recycling targets have also made incineration unnecessary for many large cities.

Similarly in the European Union, higher targets for organics management, recycling, waste reduction and waste diversion have caused incineration overcapacity, meaning there are more incinerators than waste available for burning. This overcapacity has led to waste importation in Germany, the Netherlands, United Kingdom, Sweden, Denmark and Spain.

This global shift is seeing many countries embracing Zero Waste and are investing in long-term waste management strategies, including shutting down their incinerators. Hundreds of municipalities in Italy and Spain have now set Zero Waste as a goal.

Zero Waste, the sustainable approach to waste and resources

With the ban on waste incineration enshrined in RA 8749 or the Clean Air Act of 1999, and with RA 9003 or the Ecological Solid Waste Management Act of 2000, the Philippines has already taken the first steps toward a sustainable future with Zero Waste.

RA 9003 and the incineration ban in RA8749 have set the direction for the sound and ecological handling of wastes that protects communities and the environment. We must not allow these laws to be compromised. We should instead protect and uphold their provisions, and strengthen and support their implementation.

Real solutions to waste and energy are already being pursued throughout the country. Many communities are pursuing the Zero Waste approach envisioned in the Ecological Solid Waste Management Act, and recent years have seen the massive uptake of renewable energy solutions such as wind and solar. We need to focus on supporting these solutions instead of pursuing the false path of “waste-to-energy” incineration which will take resources and investments away from real solutions that are already working.

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