

THE ZERO WASTE CITIES MODEL

Opening questions for the reader before reading:

- Why focus on cities/municipalities with zero waste instead of individuals or national governments?
- What do you think makes a Zero Waste City?
- Where are the Zero Waste Cities in Europe today?
- What would be the reasons for a city to want to become zero waste? What would be the reasons why they wouldn't?

'Zero Waste City'

Any municipality who has committed to become zero waste by a specific timeframe, through the implementation of local policies that create a system which simply does not generate waste in the first place.



“Zero Waste Cities” is a term used by Zero Waste Europe and their Zero Waste Cities programme, which is dedicated to help cities and communities transition towards zero waste. It brings together an European-wide collective of expert knowledge for local stakeholders to implement best practices, as well as providing mentoring and recognition for municipalities wishing to implement zero waste strategies. [Zero Waste Cities](#) is jointly run by Zero Waste Europe in Brussels and its member organisations throughout Europe. It is worth noting, though, that the Zero Waste Cities movement is global, with other municipalities also committing to zero waste and implementing activities in other parts of the world. For more information about the Zero Waste Cities work outside of Europe, check the website of [Global Alliance for Incinerator Alternatives](#) (GAIA).

A great focus is placed on municipalities as this is where **waste is created, managed, and most visualised for the majority of people** – and, therefore, is where the biggest impact can be made. In most countries, municipalities are the ones responsible for the collection, management, and reduction of waste in their area, organised via public, private, or hybrid waste companies. Furthermore, greater emphasis has been given to zero waste at the local level as this helps empower community stakeholders on their collective journey. By working with local households, businesses, schools, and the entire community, municipalities can embed zero waste behaviours and policies within the community, ensuring the long-term strength and viability of such strategies.

Ambitious EU legislation regarding waste and recycling is in place today, whilst the EU’s **Green Deal and Circular Economy Action Plan 2.0** will provide further requirements and incentives for Member States to transition towards a circular economy. While national governments are the ones responsible for reaching these goals, their fulfilment will require local authorities to accelerate and change gears in the coming years. This means that prevention and reuse policies are designed and implemented effectively, whilst the separate collection of high-quality recyclable materials becomes the norm. With lowering levels of waste generated in Europe, this will facilitate the phasing out of disposing waste into landfills and incinerators, with increased emphasis placed on the positive impact this will have on achieving the EU’s target of becoming carbon-neutral by 2050. For more information about what targets are set by the European waste policy, check the *Waste policy and advocacy* chapter.

DEFINITION OF A ZERO WASTE CITY



**What do Zero Waste Cities do differently from other cities?
What would your city need to do differently?**

Zero Waste Cities all hold one central feature: the desire to keep improving and optimising their existing strategies to reduce waste even further. Whether a municipality is at 7% or 70% separate collection rates, it can always be better, and it is this desire which sits at the heart of our approach.

The foundation of a Zero Waste City is an effective waste collection, one that allows for high-quality recyclable materials to be collected, including most notably organics. This is a door-to-door (kerb/curbside) separate collection system, which delivers that quality.

Why is the door-to-door collection most effective, and why does it give the best quality materials for recycling?

If you are unsure of your answer, you can read more about this from the *Waste collection* chapter.

However, Zero Waste Cities go beyond just recycling by creating and maintaining systems that prevent waste from occurring in the first place. Policies that **prioritise reuse** are adopted, such as laundry systems for cloth nappies, whilst municipalities can set a legal and regulatory framework to enable business-led solutions to flourish, such as [Deposit Return Schemes](#) and packaging-free shops.

Furthermore, a key distinction of our Zero Waste Cities is that they commit to work towards **phasing out** their use of **rigid residual (mixed) waste management** facilities that do not allow for the constant improvement of waste prevention and recycling rates. Zero waste programmes, in the long-run, only accept residual waste management facilities that:



- Maximise the recovery of recyclables,
- May be progressively converted into recycling platforms,
- Avoid any thermal treatment, which is considered as “destructive disposal” and a loss of resources.

All Zero Waste Cities implement policies which prioritise the upper end of the waste hierarchy.

THE FRAMEWORK OF A ZERO WASTE CITY

Zero Waste Cities have acted as pioneers for others, consolidating the principles for operationally optimised, cost competitive schemes. Key practices within these strategies include:



- The separate collection of dry recyclables.
- The separate collection of organics.



- The implementation of [Pay-As-You-Throw \(PAYT\)](#) schemes or other economic incentives.
- Reuse and repair initiatives.

One key element to highlight is **residual waste audits**, as they expose materials that are hard to recycle/reuse, and this is a mighty powerful tool in generating messages to industry representatives, reminding them of their responsibility for redesigning such products that cannot be reused, repaired, or recycled. Furthermore, these audits have been used to promote new business models that provide solutions to the most problematic materials, such as centralised washing services for cloth nappies and rental services for reusable tableware.

A residual waste audit or assessment

is the process of understanding what remains in the non-recycled bin. The process includes collecting residual waste from a certain % of local households, and then analysing this to collect data on the type and volume of materials found.



Residual waste assessments are fundamental within a local zero waste programme, as they help municipalities understand what continues to not be recycled. Local authorities can then use this data to better design and optimise the system, whether that's reducing collection rounds for residual waste or increasing educational activities on the types of plastic that can be recycled but may currently still be put in the residual waste bin.

An example of using a waste audit for zero waste:

Capannori, Italy was the first municipality to have formally committed to a zero waste programme in 2007. After reaching around 80% separate collection, audits by their Zero Waste Research Centre found a growing number of coffee capsules which are impossible to recycle. The information was passed on to industrial coffee-makers, who started dedicated research for reusable or compostable capsules (which can be collected together with organics).



Whilst separate collection for recycling and composting has been the cornerstone for local implementation of zero waste programmes (it's effectively the "low-hanging fruit"), lately we have seen a growing focus on reduction and reuse. This will surely be the next step to make a dent in the already minimised amount of residual waste, so as to make further progress towards the magic number: "zero". Propelled by the new vision of a circular economy, an increased emphasis on reduction and reuse is the foundation of a long-term roadmap to sustainability.

In the meantime, optimised kerbside (door-to-door collection) and PAYT programmes are helping us minimise disposal and keep materials/resources in the loop in their best quality for as long as possible. Municipalities that already achieve 80-90% separate collection rates, and consistently less than 100 kg/person residuals a year (in both rural and urban areas), show us that not only is it sensible to adopt a zero waste approach, but that it is also possible and effective.

On a practical level, we talk about **10 steps** for a municipality to become zero waste.

Before checking the list below, what kind of 10-step plan would you make for a municipality starting from scratch?

10 steps towards becoming a zero waste municipality

- 1. Source separation** – beginning at the household and business levels (the source of municipal solid waste generation), individuals separate recyclable materials from non-recyclable ones.
- 2. Door-to-door collection** – it is then the responsibility of municipalities to organise the collection of as many recyclable materials as possible directly from households/businesses. This includes paper/cardboard, plastics, metals, glass and, most importantly, organics.
- 3. Composting** – once food and garden waste is being separately collected and therefore of a high quality, Zero Waste Cities should establish infrastructure and incentives for community members to compost. This could be done either at home or via community compost centres; if neither are suitable, larger composting sites can be established.
- 4. Recycling** – with higher amounts of recyclable materials being collected, which are less contaminated due to their separation and, therefore, of a higher quality to the secondary material market, municipalities should be able to operate effective recycling systems that form the foundation of a Zero Waste City. Revenues can increase and the amount of waste sent to landfill/incineration can be dramatically reduced in a short period of time.
- 5. Community reuse and repair centres** – every Zero Waste City should recognise that recycling alone is not enough, and therefore a culture and system needs to be established locally which prioritises reuse and repair. One of the biggest policies available to municipalities is to create community reuse and repair centres, where individuals can bring materials that otherwise would have been previously discarded, so that they can be repaired and prepared for reuse again.
- 6. Incentivise waste reduction** – economic incentives should be introduced to support the community to reduce their waste further. Most commonly this is done via a Pay-As-You-Throw system, which introduces a higher fee for households and businesses that generate the most waste. However, many other options are available to local authorities, such as rewarding homes which compost with discounts to local services and businesses.
- 7. Zero waste research** – zero waste systems make waste visible. Cities adopting such strategies should continually conduct regular research and analysis (e.g. residual waste assessments) into the waste that is not being recycled. With this information, municipalities are in a much better position to understand what isn't being recycled, so that policies can be put in place to address and overcome these remaining challenges.

- 8. Banning single-use items**– municipalities have direct control over the events and activities which are held in public spaces and buildings. One of the best ways to reduce waste and also send a strong message to the community is for municipalities to ban all single-use materials in all public spaces, events and buildings, with reusable alternatives offered instead.
- 9. Residual separation and stabilisation facility** – an important aspect of managing the dwindling amount of residual waste that’s being generated is its proper stabilisation. Stabilisation means that residual waste has been properly treated to remove as many recyclables as possible and to reduce its fermentability. It’s a key method in helping reduce subsequent toxics and greenhouse gas emissions from arising once the waste is landfilled. All Zero Waste Cities recognise the incompatibility of incineration within a society that is circular and zero-carbon. Therefore, alternative facilities should be established to conduct a post-sorting on the residual waste and maximise the recovery of recyclable materials, which is then further supplemented by the biological stabilisation of the remaining waste.
- 10. Transition to safe landfill** – with the remaining residual waste biologically stabilised, this should be sent to a safe landfill instead of any form of burning. Over time, as the effectiveness of municipalities’ reuse and recycling systems increase, the volume of residual waste will continue to decrease and, therefore, reduce the need for, and impact of, landfill sites.



Example of a Zero Waste City compared to a city without such a commitment

City with a traditional waste management system	City with a zero waste system
Different recyclable materials collected altogether in one bag or bin	Recyclable materials are separately collected in different bags and bins
Citizens put their recyclable materials into shared bins on the street	Citizens separate recyclables into bins at home which are collected from the kerbside
Citizens do not compost their organic waste	Citizens are provided with equipment and education on how to compost at home, whilst community compost centres are established with the help of the city
All citizens pay a standard waste fee	Citizens pay a varied waste fee dependent on the volume of waste they generate
The city has a fixed long-term contract with a landfill or incinerator	The city has a flexible residual waste disposal option that does not lock in the need for continued waste generation
Businesses who want to offer reusable alternatives must do this by themselves	Businesses who want to offer reusable alternatives are provided with financial and/or knowledge support and/or put in contact with companies that can provide the reusable products/infrastructure
The city does not have any data on what waste is not recycled	The city conducts regular residual waste assessments to understand the composition of the current non-recycled waste, and uses this to inform future policy-making processes
Public events, buildings, and spaces offer single-use items, such as cutlery and cups	Based on a common policy, public events, buildings, and spaces only offer reusable options
Citizens are unaware of where they could take items that need repairing, which will otherwise be discarded and waste	Citizens can easily access information on a large number of reuse and repair opportunities within the city

Benefits of becoming a Zero Waste City

There are several potential and meaningful benefits available to local communities who adopt a zero waste approach. We break these down into 3 main categories: economic, environmental and social.

Before checking the list below, what benefits would you write under each category?

Depending on the local context, the benefits for each city will differ. For example, for municipalities with [Extended Producer Responsibility \(EPR\)](#) systems, the economic benefits will differ to those where no EPR exists. However, here are the general benefits from which communities have benefited over the past decade:

Economic

- Reduced operational costs for municipalities as the collection system becomes more optimised with less residual waste.
- Higher revenues for the municipalities as they have a higher volume and better quality of recyclable materials to sell onto the secondary market.
- Fewer fees having to be paid by the municipality to send the residual waste to landfill or incineration.
- Fewer capital investment required for large scale incineration technologies, with zero waste infrastructure offering a much cheaper and yet more effective methodology for reducing waste.
- Zero waste systems create more jobs throughout the whole supply chain and therefore municipalities can increase local employment. On average, zero waste policies create 10x more jobs than landfill or incinerator alternatives.¹



Environmental

- Obviously, zero waste policies result in less waste generation. This means less pollution, via discarded waste, leaks into our oceans, land, soil, and our air – doing vast amounts of damage to our planet’s biodiversity and ability to fight climate change.²
- Zero waste systems produce less greenhouse gas (GhG) emissions throughout the whole cycle of a product. If a material can be reused, then there is no need for extraction and manufacturing, which damage landscapes and biodiversity and are huge sources of GhG emissions. On the other hand, the incineration of materials continues to unnecessarily contribute towards climate change, as do ongoing methane emissions from organic material ending up in landfills instead of composting sites (proper composting is chemically a different – managed – process from what happens to organic waste in landfills).



¹ Ribeiro-Broomhead, J. & Tangri, N. (2021). [Zero Waste and Economic Recovery: The Job Creation Potential of Zero Waste Solutions](#), Global Alliance for Incinerator Alternatives.

² [The True Toxic Toll: Biomonitoring of incineration emissions](#), Zero Waste Europe (2021)

- A system using reusable materials and less single-use packaging is one that has much less toxic chemicals in circulation, which are doing severe damage to the natural environment and human health. Chemicals found in many forms of single-use packaging are proven to be dangerously harmful to human health. There is also growing evidence showcasing the negative impact that toxic emissions from incineration plants are having on local communities.³

Social

- Zero waste jobs are jobs in sustainable fields of work, therefore helping to protect the livelihoods of those involved in the long-term. By supporting businesses and social enterprises which focus on reuse, repair, redesign and recycling, local authorities can help empower their communities – integrating and upskilling individuals into the wider community.
- Zero Waste Cities are cleaner and safer than most of today's cities, bringing pride and a sense of collective togetherness to the community. For example, community composting, repair cafés, cooking with food discarded by supermarkets, to name just a few, are all zero waste activities which help bring the community together and build its resilience as a collective unit.
- Zero waste is all about local solutions to manage resources. This means investing in new business opportunities that design waste out of the system, in awareness-raising and education together with optimising separate collection to manage the waste locally. This is in stark contrast to traditional waste management, which is capital investment- and technology-intensive. This means investing money in creating local jobs that cannot be delocalised later down the line.



The exact benefits available to each municipality that wants to become zero waste will differ every time, depending on the specific context and regulatory environment. However, in typical European conditions, adopting a well-designed zero waste programme will help local authorities reduce costs of the waste system, create local jobs and, obviously, reduce the volume of waste that is generated.

Additional reading:

[Zero Waste Masterplan](#) – an in-depth introduction to zero waste and what it means for municipalities.



[Zero Waste Cities Certification](#) – launched in 2021, the Certification provides the most robust and structured framework on what a Zero Waste City is.

[State of Zero Waste Municipalities Report](#) – the most comprehensive overview of the current network of Zero Waste Cities and the impact they are having.

³ [Food Contact Materials](#), Zero Waste Europe

[Zero Waste Cities best practice case studies](#) – presentations about the best examples of zero waste at the local level.

[Zero Waste Cities website](#) – full of resources on the topic and the number of Zero Waste Cities across Europe.

[The Keep it Clean Plan](#) – a practical guidebook on how to start implementing zero waste on different levels of society.

[Factsheet on the cost effectiveness of zero waste](#) – showcasing the economic benefits of zero waste.

FREQUENTLY ASKED QUESTIONS

Before reading the answers, think to yourself: **how would you answer them?**

1. How do I know where my city stands according to the waste management system and policies?
2. How can I get started in supporting and planning the transition of my city to zero waste?
3. What are the best examples from European Zero Waste Cities?

1. How do I know where my city stands according to the waste management system and policies?

For potential scenarios and suggested steps please refer to:

- [The Masterplan](#) (part 3) where you will find the questions to help a municipality get started and examples of different starting points in different contexts around Europe.
- These [3 starting scenarios](#) to help municipalities overcome the most common challenges facing them today.

2. How can I get started in supporting and planning the transition of my city to zero waste?

Please refer to the 10 clear steps for designing a zero waste plan at the municipal level, as well as the documents linked above as they each provide a good overview of how to begin with your local municipality. The main resource is the Zero Waste Masterplan by Zero Waste Europe and the toolkit [Creating a methodology for zero waste municipalities](#), which includes the [savings calculator](#) that has been designed to help you visualise and understand the benefits that adopting zero waste policies can bring to your local area.

3. What are the best examples from European Zero Waste Cities?

You can find many examples from [State of Zero Waste Municipalities Report](#) and various [case studies](#) of zero waste frontrunners on how a city can move towards zero waste.

Ending questions for the reader to reflect upon:

- What parts in this chapter were most confusing or difficult for you to understand? Why do you think it was so?
- How are responsibilities divided among different waste management stakeholders in your country?
- Who could be your main allies in establishing a Zero Waste City? Who would likely oppose it the most?
- What initiatives are already in your city that could form part of a Zero Waste City ecosystem?
- What do you want to take with you from this chapter?
- What are the next steps, if any, that you want to take in your work regarding this topic?
- What do you want to know more about?