



ZERO WASTE HANDBOOK:

How to Drive Systemic Change

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This is a new version of the Zero Waste Training Handbook, featuring updated and new zero waste chapters. The trainer chapters have been moved to a separate handbook.

The BEZWA1 and BEZWA2 projects (Building the European Zero Waste Academy) are Erasmus+ funded collaborations between seven organisations with the aim to create a strong educational framework in support of the Zero Waste Cities movement in Europe.



[Zero Waste Estonia](#) is a social enterprise that consults, trains and mentors public and private organisations to help scale societal change and innovation for successful implementation of zero waste and circular economy principles. ZWE also directly advocates and promotes policies and develops tools to create new solutions.



[Društvo Ekologi brez meja](#) is one of the leading Slovenian NGOs dedicated to improving the state of our environment — focusing on efficient resource use and active citizenship. Most of their activities deal with waste at its source and they also run the Slovenian network of zero waste municipalities.



[Mission Zero Academy](#) is the capacity-building hub for local decision-makers, SMEs, and other organisations wanting to take a step forward in their zero waste strategies and circular economy implementation. With this in mind, and with focus on evidence-based and expert-approved methods, they support public and private sector professionals with tools, training, advisory services and certification systems.



[Zero Waste Europe](#) is the European network of communities, local leaders, experts, and change agents working towards the elimination of waste in our society. We advocate for sustainable systems and the redesign of our relationship with resources, to accelerate a just transition towards zero waste for the benefit of people and the planet.



[Estonian University of Life Sciences](#) has priorities in academic and research activities, which provide the sustainable development of natural resources necessary for the existence of Man as well as the preservation of heritage and habitat. They are the first in Estonia to provide education about waste management.



[Zero Waste Alliance Ukraine](#) is an umbrella NGO that supports civil society organizations, initiatives, and agents of change to reduce waste generation in Ukraine. ZWU is changing the waste management system in Ukraine in accordance with circular economy and zero waste principles, adhering to the waste management hierarchy, focusing on waste prevention and refusing waste incineration.



[Tallinn University](#) is a modern and dynamic research university in Estonia with a leading role in promoting an intelligent lifestyle through education, research, and a unique collaboration across disciplines. They view an intelligent lifestyle as making research-based decisions in order to improve society in general and the well-being of its citizens.



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INTRODUCTION

Author: Kadri Kalle

"Once we adopt a new view of the world (or any part of it), we immediately lose much of our ability to recall what we used to believe before our mind changed."

Daniel Kahneman

This quote by Nobel-Prize winning psychologist Daniel Kahneman can be understood in two ways: one is that by expanding our knowledge and understanding, these new views become an integral part of us. This gives us hope that once we adopt the zero waste mindset, it becomes hard for us to imagine a different way of managing resources. But the flip side of it is that the more we become experts in something, the harder it becomes for us to explain and teach it to others. Our system of knowledge (known also as mental models) becomes increasingly complex and compact, where details that are important for a beginner fade into the background. The steps in our thinking process flow so smoothly that we ourselves do not notice it anymore. As experts, we need to unpack our ways of thinking in order to help beginners develop their expertise. This is what we have attempted when creating this handbook.

The aim of this handbook is to support the implementation of different zero waste courses, with the overall goal of empowering zero waste practitioners to support and drive their communities towards long-term systemic change. This handbook gives an overview of the main topics needed for that change, and offers some exercises and additional reading material. The chapters can be used as background reading on specific topics, or the whole handbook as a basis for a zero waste training course.

HOW TO USE THIS HANDBOOK

This handbook can be read through from the first to the last chapter, or simply by focusing on specific topics. Each chapter is also available as a separate file, to make it easier to share in case there is a need to work with just one topic at a time. Here are some options of how to use the chapters:

- Read them, answer the questions, do the exercises to learn more about the topic.
- Use the content (the questions and exercises) to set up your teaching sessions on the topic.
- Distribute them as basic/additional reading materials to learners in your own zero waste training courses.



Another aim of this handbook is to help the readers learn something new. Although reading can seem like a straightforward way of learning, there are ways to make it more effective. And for that, we first need to introduce the term – metacognition.

Metacognition, in the context of learning can be defined as:

- Understanding how learning (thinking) happens in our heads;
- Awareness or analysis of one's own learning or thinking processes;¹
- Planning, monitoring and evaluating your own learning, reflecting on one's own performance.²



Metacognition is not learning itself, but rather thinking about and managing your learning, for example knowing:

- What helps you to remember better;
- How attention works and how to better keep your attention during the learning process;
- How to help yourself, when you don't feel motivated to learn;
- If you need help in your learning process and how to ask for it;
- What are effective learning strategies (even if they feel ineffective);
- What are ineffective learning strategies (even if they feel effective).



Metacognition is an essential part of self-development and learning. It has been said that we might learn more from reflecting on our experiences than from the actual experiences themselves.³ It's important to note that metacognition is a rather complex topic and we are only very briefly touching upon it here.

Metacognition means being able to assess if we are learning effectively or ineffectively, and how we can adapt our learning strategies. This means that we should take a break from the learning activity regularly to reflect on the process – a skill we have also provided tips for in this handbook.

There are several questions in this handbook, both for thinking about the topic at hand as well as about the process of reading:

- **Opening questions** – to focus the reader's thinking on the topic, to think about their existing knowledge and knowledge gaps. These are also great as thought starters in learning sessions.
- **Closing questions** – what was understood, what remains unclear, what can be done with the information from the chapter, what to do next. These could be used as reflection or homework questions after learning sessions.

When it comes to effective learning strategies, it's important to understand that reading is not an effective learning method in itself. It becomes effective only when we take pauses to link the new information with our existing knowledge⁴, when we try to rephrase the ideas with our own words, find examples ourselves etc. That's why we have also added questions within the text with this image:

¹ [Merriam-Webster Dictionary](#)

² National Research Council (NRC) (1996). National Science Education Standards, Washington, DC: National Academies Press.

³ Dewey, J. (1933). *How We Think: A Restatement of the Relation of Reflective Thinking to the Educative Process*.

⁴ more about it in the *Main Principles of Teaching* chapter of Trainer Handbook.



It invites you to pause and think about the topic and possible answers before reading them from the text.

We recommend taking these questions seriously, pause to think about them, even write them down, as this is the best way to maintain active thinking and focus on the material. Our aim is not to provide answers to all the questions, but to cultivate the habit of asking questions, of trying to find answers, of thinking about things more deeply, of self-testing what we have actually learned and sometimes also realising we do not have the answers yet.

One final suggestion on smart learning strategy in order to make sure you will remember better what you read in this handbook:

- Practice self-testing exercises, also known as **retrieval**. This means returning to a topic after some time has passed (important is that you have had time to forget it a bit) to test **how much you can recall from memory**. One way of doing this is to write down everything you remember without looking at your notes or the chapters. Once you have done that, you can check the chapters to see what you remembered correctly, what incorrectly and what you didn't remember at all.



Retrieval exercises are **one of the best tools for learning** and for integrating new knowledge into our long-term memory. You can read more about learning and metacognition in the chapters *Main Principles of Teaching* and *Metacognition* in the Trainer Handbook.

THE CREATION OF THIS HANDBOOK

This handbook was created during two Erasmus+ funded projects – “*Building the European Zero Waste Academy*” in 2020-2022 and its follow-up project in 2025-2027. This is the second edition of the handbook, which includes some updates and new chapters. The original version of the handbook had two parts – Resources for Zero Waste Ambassadors and Resources for Zero Waste Trainers, but as the content and courses have evolved, the two sides have been split into two handbooks. The teaching topics can be found in the *Trainer Handbook: How to Teach Sustainability Topics Effectively*.

The topics of the handbook were developed as learning materials for several zero waste courses, meant for zero waste beginners, supporting either their community or organisation; for municipalities wishing to adopt zero waste practices; and for mentors guiding cities and businesses on their zero waste journey.

The content of the handbook is based on the latest research in waste management and waste prevention, and the authors' practical experience in the field. Educational psychologists were consulted in order to design the chapters in a way that supports learning. Additional input for the handbook has been collected from different trainings and target group representatives in the period of 2021-2026.

ZERO WASTE BASICS

Authors: Jaka Kranjc, Mait Kriipsalu and Anastasiia Martynenko

Opening questions for the reader before reading:

- What do you want to know most about zero waste principles?
- What does zero waste mean to you?
- What would you say is definitely not zero waste?
- What are some zero waste examples that you are familiar with ?
- What could be the guiding principles of zero waste?
- Why do you think zero waste is important?

Zero waste can mean many things to different people but the key connection is that zero waste is a goal that is pragmatic and visionary, local and global, at the same time. Inspired by nature, the zero waste philosophy works in an ecosystemic way to maximise what is available in the community alongside building local resilience and increasing the natural capital available for future generations.



Before reading on, think: How would you define zero waste? How do you usually explain this concept to those around you?

Can you guess the missing words in the most used definition of zero waste?

"Zero waste is the _____ of all resources by means of _____ production, consumption, reuse and _____ of products, packaging and _____ without burning, and with no _____ to land, water or air that threaten the environment or _____."

Make your guesses, read on and see if you can get some hints in the text before reading the full definition on the next page.

Zero waste aims at rethinking the way we produce and consume in order to preserve the value and energy embedded in our planet's resources whilst enabling civilization to flourish and prosper. While waste management aims at turning waste into resources, zero waste is about **keeping resources from becoming waste**. There will always be losses when converting waste back into resources, demanding more virgin material. The zero waste approach makes it easier to ensure we remain within the limits of our [planetary boundaries](#)  and reach the Sustainable Development Goals. However, it is important to note that to reach these targets, process and product optimisation will not be enough. Zero waste is also about advocating for a [reduction of material resource use](#)  and the concept of sufficiency.

It's also about designing waste – and the toxics and inefficiencies associated with it – out of the system. In a zero waste system, the value of materials and products is kept within the community where they are used over and over again. Any technology that doesn't allow for materials to be safely taken back into circulation is deemed unacceptable and phased out (e.g. incineration which does not support the zero waste philosophy). Meanwhile, recycling is important to close the loop on a smaller scale, and it should be viewed as an end-of-pipe solution as we cannot recycle our way out of a wasteful society.



Before reading on, think: Why is recycling not enough to achieve a zero waste world?

If you are not sure of the answer, see if you can find it in the rest of this chapter. You can also find more information in the *Waste Treatment* chapter.

And here is the full zero waste definition:¹

Zero waste is the conservation of all resources by means of responsible production, consumption, reuse and recovery of products, packaging and materials without burning, and with no discharges to land, water or air that threaten the environment or human health.

**What was the difference between your wording and the official one?****Would you be able to explain all its elements?****For example: what is the difference between recycling and recovery?**

The main waste terminology in the European Union (EU) is defined in the Waste Framework Directive.² This is the legal basis everyone working with waste in the EU has to follow:

Recovery – any waste management operation which results in waste serving a useful purpose by replacing other materials which would otherwise have been used. Recovery operations are listed as R-codes R1 to R 13 for legal purposes.

It's important to note that under recovery we can distinguish:

- **Material recovery** – any process of obtaining materials from waste that still have useful physical or chemical properties and can be reused or recycled for some purpose.
- **Energy or thermal recovery** – conversion of waste into usable heat, electricity, or fuel. Examples are incineration, pyrolysis and gasification.
- **Chemical recovery** – decomposition of mainly mixed plastic waste to new polymers. It converts pyrolysis oil or gasification gas into feedstock for production of new plastic materials.



Disposal – any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy. Disposal operations are listed as D-codes D1 to D 15. Landfilling is a disposal method.

Treatment – recovery or disposal operations, including preparation prior to recovery or disposal.

Recycling – any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material. It does not include energy recovery or landfilling.

Reuse – any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

Colloquially the term “reuse” is used more broadly, which can lead to confusion. If you want to be precise or are reading official documents, there's no such thing as reuse of materials (it's either still a form of “use” or, if waste is involved, a treatment process like recycling). Also, the fact that it has to keep the same function is not intuitive – planting flowers in an empty tub of ice cream does not make it a case of reuse of that tub, since it's clearly not serving as food packaging any more. To add to the confusion, there is the term *preparation for reuse* (see image on the next page), which is a treatment process that turns

¹ Zero Waste International Alliance (2018). [Zero Waste Definition](#) [✓]

² [Waste Framework Directive 2008/98/EC](#) [✓] (amended with [Directive 2018/851](#) [✓])

waste into a product again (e.g. washing glass bottles before refilling). The products can then be reused, however the preparation itself does not count as reuse.

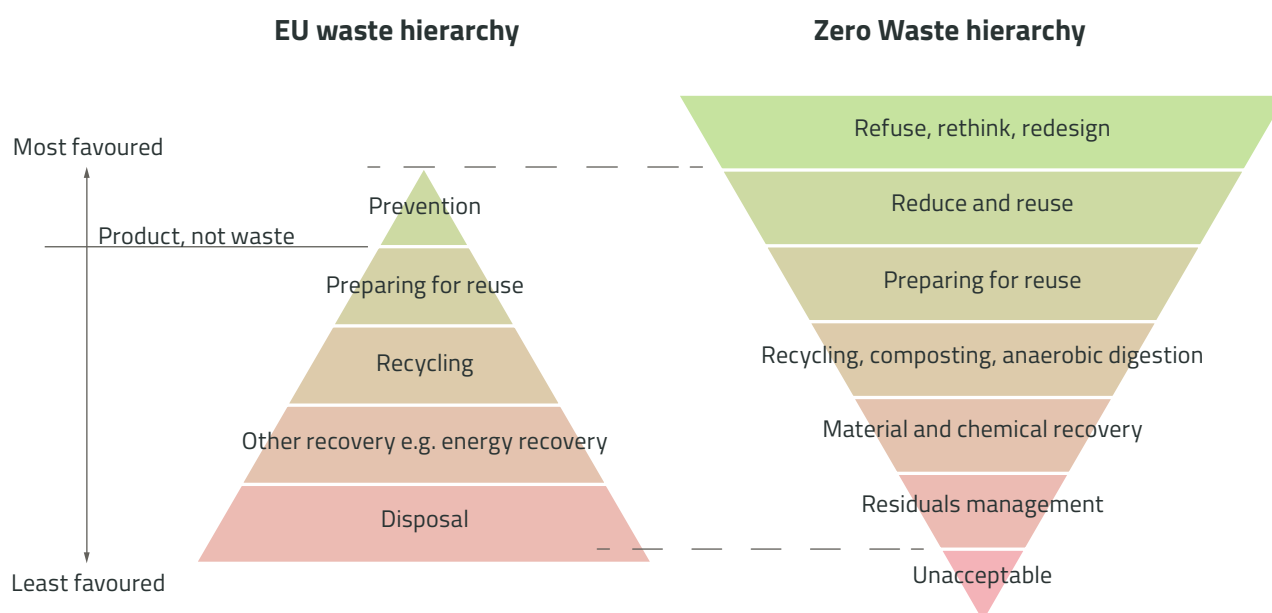
You can check all the terms used in this handbook from the *Terminology* chapter at the end.

Waste treatment methods can be listed in hierarchies, where they generally lay down a priority order of what constitutes the best overall environmental option in waste legislation and policy. In addition to the EU waste hierarchy defined by the EU Waste Framework Directive there is also a zero waste hierarchy.

You can see on the zero waste hierarchy that recycling is not the first step towards zero waste.³ Take a look at the zero waste hierarchy together with the EU waste hierarchy.



What are their differences and similarities? What could be the reasons for the differences?



It is important to note that while we prefer to use the zero waste hierarchy, the EU waste hierarchy is the only official waste hierarchy used in the EU, meaning that it's the one that decision makers and the waste management sector mostly refer to. So as zero waste practitioners, we need to be ready to clarify and explain their differences and the reasons behind them.

Besides the obvious visual difference in the direction of the pyramid, the EU waste hierarchy has two levels less, and is less circular. The zero waste hierarchy gives more importance to the preservation of high quality products and materials, as well as optimising mixed waste treatment before opting for disposal. The reason why the pyramids are presented in opposite directions is to reflect their priorities, with zero waste prioritising prevention and minimisation of disposal. On the next page you can see a more detailed overview of the zero waste hierarchy.

³ Zero Waste Europe (2020). [The Zero Waste Masterplan](#) [\[link\]](#).

Zero Waste Hierarchy



The Zero Waste Hierarchy was developed by the Zero Waste International Alliance⁴

⁴ Zero Waste Europe (2019). [A Zero Waste Hierarchy for Europe](#)

ZERO WASTE PRIORITIES: PREVENTION, REDUCTION AND REUSE



Before reading on, think: What examples of waste prevention, reduction and reuse can you think of?

The best waste is the waste that is not produced in the first place. Hence intervention at the design stage is key to prevent having to manage waste that shouldn't exist. For example, food waste can be reduced with the right training, incentives and procurement policies in canteens, restaurants, hotels, hospitals and homes. Packaging-free shops and local markets can prevent packaging and food waste whilst providing fresh food. Most single-use packaging is superfluous and can be easily replaced with the right intervention at the city level. Coffee cups to go, containers for take-away food, throw-away water bottles or single-use straws are just a few examples of items that can be replaced with solutions that don't generate waste. Refurbishment and repair services can often more than double the lifespan of computers and peripherals, textiles and other equipment.

City authorities can also play a key role in facilitating the roll-out of refillable systems for beverages and reuse systems for nappies, as well as guaranteeing availability to alternative waste-free sanitary items within local shops. For durable goods such as electronics, furniture or clothes, it is key to encourage repair and reuse operations in the form of second-hand shops or reuse activities and platforms both offline and online. Using the purchasing power of **public procurement** to change the market, promoting paperless offices and establishing material banks and libraries for tools are other ways to prevent waste from being generated at the local level.

Prevention and **reduction of toxicity** is one of the priorities in the zero waste hierarchy. In a circular economy, all materials and products should be free from harmful chemicals in order to ensure their safety for both primary and secondary uses. Many products on the market today expose people to toxic chemicals at every stage of their lifecycle – from the extraction of raw materials (such as oil and gas used to make plastics) all the way through to waste disposal. Common products that leach toxic chemicals include, plastic water bottles; plastic, paper and bioplastic food containers; canned food and drinks; cosmetics; products with non-stick, water and greaseproof coatings; and many more. Documented adverse health effects include but are not limited to, altered neurological and sexual development; reduced fertility; as well as increased risks of asthma, obesity, diabetes, cardiovascular disease, neurologic impairment, and cancer. At the same time, diseases caused by toxic chemical exposures can lead to massive economic losses, including healthcare expenditures and lifelong productivity losses.⁵

If we focus on the highest levels of the zero waste hierarchy, **not only can we prevent waste and loss of resources, but also a future public health crisis.** At the local level, it is important to take into account the possible health implications before making any decisions, especially those that involve long term commitments and new infrastructure. For example, the toxic pollution and health risks from incinerators can be prevented by concentrating efforts on waste prevention, supporting reuse systems and separate waste collection at the source.

⁵ Zero Waste Europe (2025). [Building a healthy circular economy](#) [7].



Additional reading on prevention, reduction and reuse:

- [Blueprint for harmonising the implementation of takeaway food and drinks packaging systems for reuse in Europe \(Zero Waste Europe\)](#)
- [Designing EPR to foster the EU's competitiveness and strategic autonomy](#)
- [Facilitating the adoption of takeaway reuse systems](#)
- Blogs and publications within ZWE's '[Elevating reuse in cities](#)' project
- [Towards resource autonomy: Proposals for a Circular Economy Act](#)
- [Putting second hand first](#)



Zero waste is a vision of hope for the future.

Zero waste is an attitude.

More than a destination, zero waste is a journey, and it is open to anyone.



Cities, restaurants, hotels, events, communities, and individuals worldwide are already proving that a better world is possible by adopting the zero waste philosophy.

FREQUENTLY ASKED QUESTIONS

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

1. But in reality we can't get our waste production to zero, so isn't zero waste a utopia? We can't just close all our landfills or incinerators...
2. What is the difference between zero waste and the circular economy? Are they the same thing?
3. Why isn't recycling enough on its own?
4. Why does the zero waste hierarchy rank incineration as less preferable than landfilling, while the EU waste hierarchy ranks it the other way round?
5. What is the difference between zero waste as a personal lifestyle and zero waste as systemic change?

1. But in reality we can't get our waste production to zero, so isn't zero waste a utopia? We can't just close all our landfills or incinerators...

You will say zero waste is an illusion and you are right. A waste-free society is not a goal, but a journey. Zero waste should be understood as a mindset, not as a physical outcome. There is no simple transition to zero waste and it does not happen overnight, but with small steps to continuously reduce waste generation and improve waste separate collection. Zero waste has been increasingly adopted throughout the world by both urban and rural communities. In Europe, over 450 municipalities have committed to zero waste by introducing impactful policies, community education, and citizen participation – all aimed at minimising waste generation and ensuring the value of materials is preserved even after several lifecycles. Some have achieved impressive results: Bietto, for example, increased its separate waste collection rate from 16% to 78% in just four years, while bringing non-recyclable (residual) waste down to just 79 kg per inhabitant. This was achieved in such a short time through economic incentives to produce less waste ([Pay-As-You-Throw](#) ^[7]), and by giving citizens easy access to clear information about the waste system, their own waste generation, and how to reduce it. For more best practices, see [The State of Zero Waste Municipalities Reports](#) ^[8].

2. What is the difference between zero waste and the circular economy? Are they the same thing?

While they both have the same goals, they are two different models which complement each other in multifaceted ways. A circular economy is one that does not waste or pollute, it is an economy that keeps products and materials in use and rebuilds the natural capital of our ecosystems. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling. This is in contrast to a linear economy which is a 'take, make, dispose' model of production.

Zero waste is guided by principles known as the zero waste hierarchy, which is focused on waste prevention and encourages the redesign of resource life cycles so that all products are reused. Zero waste is a practical translation of the circular economy that can be meaningfully implemented on the ground. Zero waste strategies perfectly integrate the circular economy narrative into local level solutions, providing concrete guidelines and policies that municipalities can implement within their communities to ensure a healthier environment.⁶

3. Why isn't recycling enough on its own?

Although we might reach high rates of separate waste collection, it is difficult to know how much of it is actually recycled. Source separation can increase recycling rates, especially when we talk about the recycling of biowaste (composting or digestion). However, when it comes to manmade materials like single-use plastics (e.g. wrappers or straws), it is very rare that recycling actually takes place. In most cases, materials with high calorific value are incinerated or down-cycled because the new material is not as pure as its virgin counterparts. The effectiveness of recycling also depends on the material type, the economic value of the output materials (is there a market for them?) and safety for the environment and people. For example, aluminium and glass can theoretically be recycled indefinitely

⁶ Zero Waste Europe (2020). [Creating a methodology for zero waste municipalities](#) ^[9].

without losing quality, while paper and cardboard only withstand a handful of cycles. To reduce material and energy consumption without reducing living standards, a broader set of solutions is needed, including waste prevention, minimisation, public awareness, durable product design, proper treatment and Extended Producer Responsibility. For more information on recycling, see the *Waste Treatment* chapter.

4. Why does the zero waste hierarchy rank incineration as less preferable than landfilling, while the EU waste hierarchy ranks it the other way round?

By definition, zero waste stands for the preservation of materials and their inherent value. With (co)incineration the raw materials and the energy embedded to create the products are irrevocably lost – even if a small fraction of that energy is recovered. You can read more about the advantages and disadvantages of incineration and landfilling in the *Waste Treatment* chapter. Zero waste favours landfilling only for biologically stabilised waste, which produces no methane emissions. This is an important distinction that is rarely acknowledged, with comparisons between the two options typically assuming the landfilling of untreated waste.

Note that the EU hierarchy is a relic of linear-economy thinking and has not been updated in decades. It does not at all reflect the circular economy policies that the EU has been developing since at least 2015 (the first Circular Economy package).⁷

5. What is the difference between zero waste as a personal lifestyle and zero waste as systemic change?

Unlike a tree, a system can grow from the ground up or top-down. A single individual with a zero waste lifestyle will not affect the wider society unless they are in a position of power or work to that end. Without expansion, the effect will stay limited. On the other hand, a systemic approach to change considers the wider structures and processes at play. Actions taken at that level may take time to reach individuals, but can be much more transformative and effective, both from the perspective of reach and radicality of change.

However, this is not to say zero waste lifestyle activism is somehow worthless. The two approaches are complementary: individual change is necessary for a system to change and the overall process will be easier when supported at both ends.

⁷ For example the Roadmap to a Resource Efficient Europe from 2011

Closing questions for the reader to reflect upon:

- Which parts in this chapter were most confusing or difficult for you to understand? What do you think made them challenging?
- In your experience what is the hardest zero waste concept to explain to people? Why do you think that is?
- What examples of reuse or waste prevention from your municipality or country have you found inspiring?
- What do you want to take with you from this chapter?
- What do you want to know more about?

ZERO WASTE, WELLBEING AND VALUES

Authors: Kadri Kalle and Anastasiia Martynenko

Opening questions for the reader before reading:

- What do you want to know most about the connection between zero waste and our wellbeing?
- Why do you dedicate your time to zero waste or other environmental issues?
- What do you value the most in life?
- What kind of connections do you see between your core values and zero waste?
- What are the reasons why people get interested in zero waste?
- How can zero waste solutions make us feel more happy?
- What do you think are the health impacts of waste and how zero waste can help reduce those?

For people working in zero waste and in environmental topics in general, it's quite obvious that zero waste helps us to preserve natural resources and serves to protect the environment, which is often the main reason why we are working in it. We value nature and a clean environment.

The common opinion is that overproduction and unsustainable waste management practices create pollution and damage to the environment. It may seem that we, as human beings, are somehow separate from nature, and those who work on environmental topics or make more sustainable choices are trying to save the planet. In reality, all of us – including our health and wellbeing – depend on nature's limited clean and safe resources. Which means that **when we act with the purpose of addressing waste-related issues we are inevitably protecting ourselves**, our present and future wellbeing, public health and our basic human rights.

It is truly important to see the waste issue as more than just piles of garbage that need to be properly managed. This is because waste is a complex issue and a symptom of a broader systemic problem. Viewed this way, waste and pollution become clearly interconnected with many of the major societal, environmental and economic challenges of our time. And how applying zero waste hierarchy, concentrating on prevention and reduction can help reduce pollution and negative health impacts.

There are also other connections between zero waste, wellbeing and values which are maybe not that obvious right away. Values and attitudes are part of human nature and influence everything we do. There are certain attitudes that are part of the competences of zero waste practitioners but we can't teach them in one training. What we can do in our training courses is to strengthen the already existing values of learners and open the discussion on their importance. We have not included any specific sessions on values or attitudes into our training formats as this could be seen as a horizontal topic and embedded into different activities, in the form of discussion topic, group or individual exercise. However, it could be included also as a separate session.

All of us have certain values and we act based on them, especially in difficult situations. At the same time values are very difficult to change, as they start developing from early childhood and take a long time to form.

One theory dealing with values is the life aspirations theory.¹ First, let's look at the types of life aspirations or goals people have. Take a look at some statements below. What 2-3 options would you pick from this list as important life goals for you?

1. To have many nice things
2. To be able to grow as a person
3. To be known by many people
4. To contribute to making the world a better place somehow
5. To have power and influence over people
6. To have close relationships with friends/family
7. To have a good health

¹ Life aspirations theory, officially goal contents theory, is part of the bigger motivational theory called the self-determination theory, developed by Ryan, R. M. & Deci, E. L.

There has been a lot of research² on life aspirations and in broad terms two types can be distinguished. The options 1, 3 and 5 are what we call extrinsic goals and options 2, 4, 6 and 7 are intrinsic goals, sometimes also referred to as hedonic and eudaimonic aspirations, respectively. It is likely that you selected the sentences from one type, not both. And if you are reading this and you are interested in zero waste education, it is likely that you selected goals associated with intrinsic values.

Overview of the two types of values:²

Intrinsic life goals (eudaimonia)	Extrinsic life goals (hedonia)
Happiness from knowing you are doing the right thing	Happiness from seeking positive emotions and avoiding negative emotions
Main goal types: • Creating and keeping close relationships • Personal growth • Contributing to your community • Health	Main goal types: • Economic success, having material wealth • Fame, being popular • Image, looking attractive

While we may want to look beautiful and value our family at the same time, on the level of life goals and what we find most important in life, people tend to focus either on intrinsic or extrinsic value sets, and not on a mix of both.³ One of the value types always has a higher importance. Which values are in focus can also change throughout our lives.



And now the interesting part:

Guess which group has less anxiety, depression, unhealthy habits and unhappiness, as well as a smaller ecological footprint?

It's the group with intrinsic life goals. So, valuing community, health, relationships, working for a broader social or environmental cause, and buying less stuff also actually means living a happier life. Why? Because intrinsic life goals satisfy better our three psychological needs – relatedness, autonomy and competence,⁴ whereas extrinsic life goals are based on comparisons with others, more dependent on material things in our lives, which make us more controllable and controlled by others. The same results have been found in many studies all over the world, across different cultures.⁵ Interestingly, it

² Kasser, T. & Ryan, R. M. (1993). A dark side of the American dream: Correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology*, 65(2), 410–422.

³ Grouzet, F. M. E., Kasser, T., Ahuvia, A., Dols, J. M. F., Kim, Y., Lau, S., et al. (2005). The structure of goal contents across 15 cultures. *Journal of Personality and Social Psychology*, 89(5), 800–816.

⁴ More about that in the *Learning Motivation* chapter of the Trainer Handbook.

⁵ Just to name a few: Grouzet, F. M. E., Kasser, T., Ahuvia, A., Dols, J. M. F., Kim, Y., Lau, S., et al. (2005). The structure of goal contents across 15 cultures. *Journal of Personality and Social Psychology*, 89(5), 800–816; Williams, G. C., Hedberg, V. A., Cox, E. M., & Deci, E. L. (2000). Extrinsic life goals and health-risk behaviors in adolescents. *Journal of Applied Social Psychology*, 30(8), 1756–1771; Utvær, B. K. S., Hammervold, R., & Haugan, G. (2014). Aspiration Index in vocational students: Dimensionality, reliability, and construct validity. *Education Inquiry*, 5(3), 359–383.

has also been found that intrinsic life goals predict environmentally responsible behavior better than environmental worldview for example.⁶

Therefore, working for zero waste solutions and improving our living environment is good for our physical and mental wellbeing.

What about people with extrinsic life goals? Could they also move towards intrinsic life goals? The question perhaps is: what influences our values?

There are of course many elements in influencing values, childhood and upbringing have a big role here. But there are also some elements in our general surroundings that could have some effect in time. Some of the elements that influence our values are:

- **What the people that surround us (family, friends, co-workers, teachers...) value:**

- Which is emphasised more: cooperation or competition?
- Which is more important: fast results or taking time to learn deeply?
- Pleasing external parties or finding inner meaning?



- **The culture, political regime, tone and style of journalism:**

- How restrictive are laws and rules?
- What is considered acceptable and non-acceptable in society?
- What is praised as good behaviour in society?
- Level of freedom of expression?



- **The words we use everyday:**

- Do we talk more about extrinsic or intrinsic values, for example calling people consumers or citizens?⁷
- Do we talk more about money itself or how we can invest into human wellbeing?



- **Our everyday environment.**



How does our living environment (our cities) influence our values and nudge them? What role could zero waste solutions play in this context?

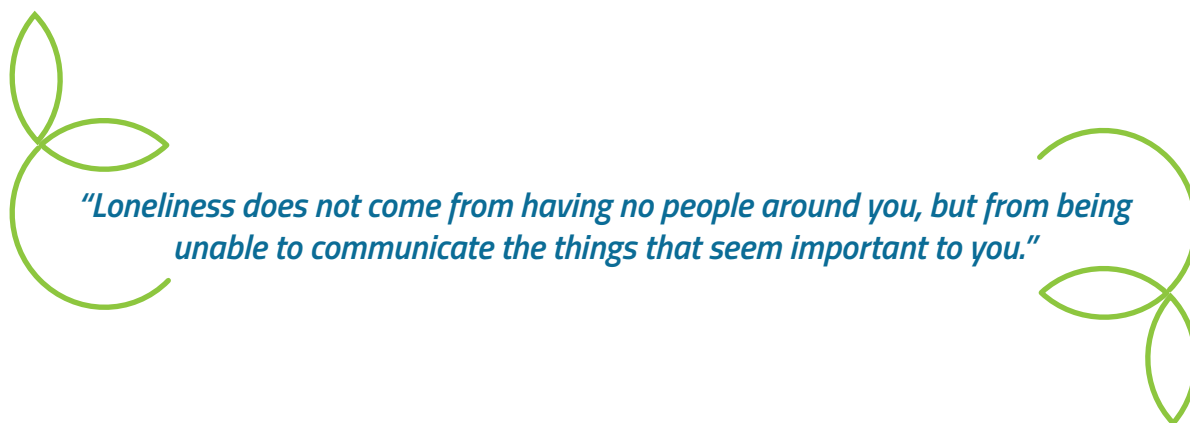
Of course it starts already with city planning: what means of transport and movement are easier (walking and cycling vs cars), what are the options for how to spend your time (shopping malls or cultural spaces and green areas), what kind of human interaction is supported by these choices and so on. And waste management is also part of that: starting with the basics of how clean and tidy the city space is (how much is common space valued and taken care of) but also showing how we treat resources that we ourselves no longer need.

⁶ Unanue, W., Vignoles, V. L., Dittmar, H. & Vansteenkiste, M. (2016). Life goals predict environmental behavior: Cross-cultural and longitudinal evidence. *Journal of Environmental Psychology*, 46, 10-22.

⁷ There can actually be differences in people's behaviour depending on whether they are addressed as consumers or as citizens: Association for Psychological Science (2012). [Consumerism and its antisocial effects can be turned on-or off](#) [7].

If we think about what the most important ideas we promote with zero waste are – waste reduction, reuse and repair centres, community composting and gardens, food sharing, reducing the toxicity of our everyday environment – then it's not only about environmental protection and cutting costs, but also about social bonds between people, developing new skills and keeping old (repair) skills alive, being creative and mindful with our things, valuing our health. Zero waste is about more connections between people, more meaningful jobs, and prioritising wellbeing over consumerism. Zero waste supports intrinsic values.

A quote by **Carl Jung** on values and human interaction as further thought in the topic:



You can read more about values, communication and getting people on board with environmental issues, in the *Communication and Storytelling* chapter of this handbook and *Learning Motivation* chapter of the Trainer Handbook.

Additional reading:

[Common Cause resources](#)  – several handbooks and other materials on working with values, including how to nudge people with extrinsic values.



Closing questions for the reader to reflect upon:

- Which parts in this chapter were most confusing or difficult for you to understand? What do you think made them challenging?
- In what other ways could we support intrinsic values?
- How much do you think we can influence the values of others?
- How do you usually communicate the importance of zero waste to others?
- What do you want to take with you from this chapter?
- What do you want to know more about?

ZERO WASTE CITIES MODEL

Authors: Jack McQuibban and Jaka Kranjc

Opening questions for the reader before reading:

- What do you want to know most about Zero Waste Cities?
- 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 that has committed to achieving zero waste targets **within a specific timeframe**, through the implementation of local policies that create a system where waste is prevented at the source.



“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 a 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. To accelerate participation in the programme, in 2021 Mission Zero Academy was established by Zero Waste Europe to host the “[Zero Waste Cities Certification](#) ”, which sets down concrete criteria cities have to meet in order to be officially recognized for their work. When talking about zero waste cities in Europe, the certification has become the leading standard and determinant of which city can call itself zero waste.

The [Zero Waste Cities](#)  programme 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.

DEFINING FEATURES OF A ZERO WASTE CITY



Before reading on, think: 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 separate waste collection**, one that allows for high-quality recyclable materials to be collected, including most notably organics. This is typically 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 compared to collection systems where the user has to bring their waste further away?

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 Zero Waste Cities is that they commit to work towards **phasing out** their use of **rigid mixed (residual) 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 mixed 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.

In Europe, a well-rounded list of criteria has been adopted to qualify deserving cities for a Zero Waste City title (see section on certification). Other claims of being zero waste at the municipal level have been challenged, as they lacked evidence and were typically thinly veiled greenwashing.

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.¹
- Reuse, repair and other waste prevention initiatives.
- Mixed waste audits.



Before reading on, think: What makes mixed waste audits especially good tools for zero waste?

A mixed waste audit or assessment is the process of understanding what remains in the non-recycled bin. The process includes collecting mixed waste from a certain % of local households, and then analysing this to obtain data on the type and mass of categorized materials.



Mixed 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 mixed waste or increasing educational activities on the types of plastic that can be recycled but may currently still be put in the mixed waste bin.

Mixed waste audits expose materials that are hard to recycle, and this is a powerful tool in generating messages to industry representatives and policymakers, 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.

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 shared with coffee manufacturers, who subsequently explored reusable and compostable capsule alternatives. (which can be collected together with organics).



¹ Read more about it from the *Waste Collection* chapter.

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"), the key focus should be on reduction and reuse. This is the next step to further reduce the already minimised amount of mixed waste, so as to make further progress towards the magic number "zero". Propelled by the 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 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 produce less than 100 kg/person of mixed waste 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 more than possible and effective.

Example: how close can a municipality come to the zero of zero waste?

Italian environmental NGO Legambiente tracks the best performing Italian municipalities in their yearly [Comuni Ricicloni report](#)  and here are some of the best results for 2024 for cities of various sizes.

Municipality	Population size	Separation rate	Mixed waste per capita
Terre d'Adige	3,138	93.3%	21.4 kg
San Giuseppe Jato	8,758	93.3%	15.7 kg
Vedelago	16,566	86.7%	42.6 kg
Ottaviano	23,243	88.7%	47.2 kg
Pordenone	53,680	83.2%	75.0 kg
Treviso	98,636	84.5%	59.3 kg
Trento	136,748	81.0%	73.2 kg

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



Before reading on, think: What kind of 10-step plan would you make for a municipality starting from scratch?

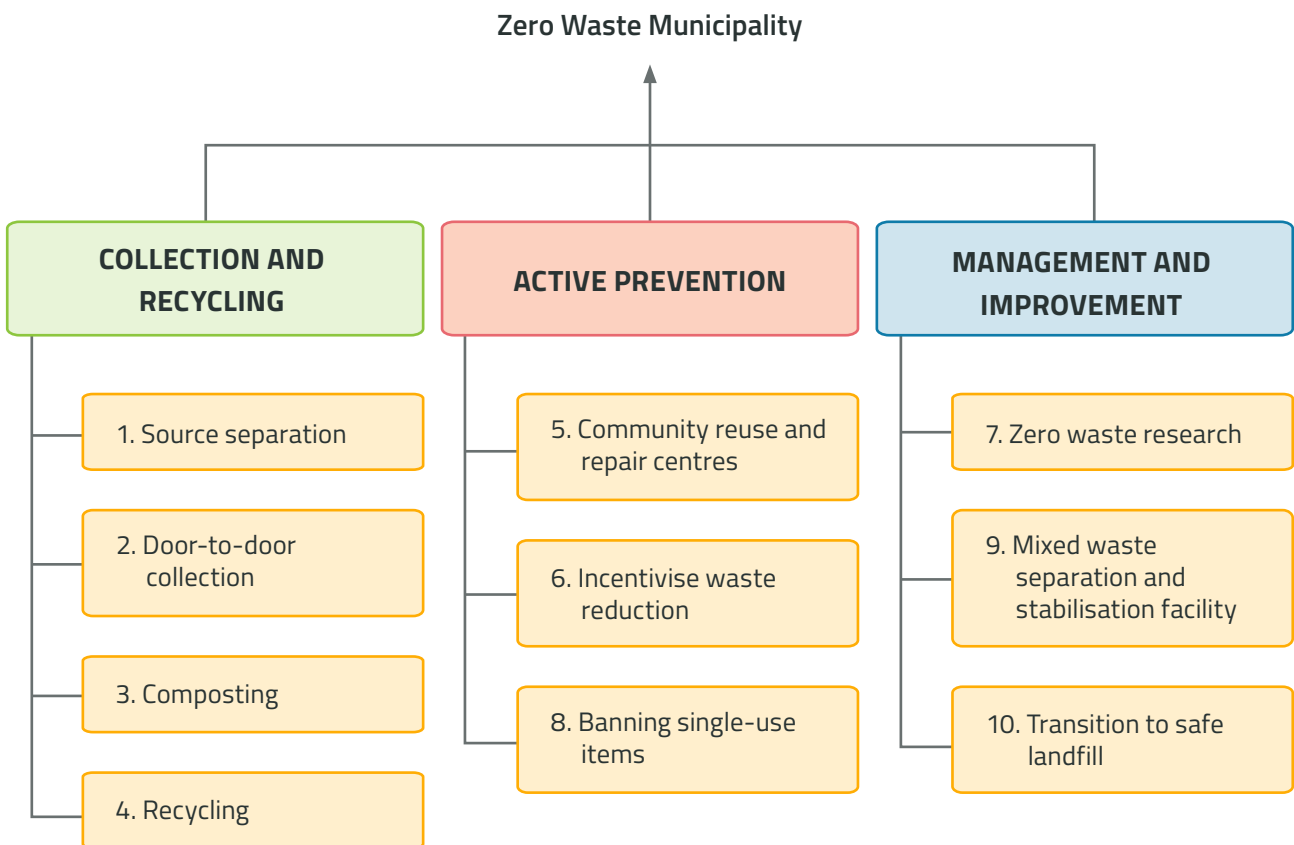
10 steps towards becoming a zero waste municipality

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 for the secondary materials 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 system needs to be established and culture developed 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 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. mixed 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 single-use items in public spaces, events and buildings wherever reusable alternatives are available.
9. **Mixed waste separation and stabilisation facility** – an important aspect of managing the dwindling amount of mixed waste that's being generated is its proper stabilisation. Stabilisation means that mixed 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 mixed 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 mixed 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 mixed waste will continue to decrease and, therefore, reduce the need for, and impact of, landfill sites.

These 10 steps can be understood through 3 processes that municipalities can build progressively and independently, all working towards the same zero waste goal. This means a municipality does not need to complete one step before starting another; progress in each area contributes to the overall zero waste system. The 10 steps and their categorisation have been summarised in the chart below.



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. Or an organized collection system is in place and the waste is industrially composted.
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.

ZERO WASTE CITIES CERTIFICATION

The Zero Waste Cities programme started with Capannori's decision in 2007 and has since spread widely across Europe with the help of Zero Waste Europe and its members. For a long time it was a completely individualized process, with every city and their mentors approaching the work differently. Initially this worked well enough, but as the programme's popularity grew and with it the number of cities with zero waste programmes, several problems became apparent.



Before reading on, think: What could be the problems with such an approach?

Firstly, while zero waste has a formal definition, "zero waste city" does not. This means anyone could define it, claim their city is zero waste. As the label has been seen as progressive and ambitious, the risk of greenwashing was high. There were numerous cases when the true spirit of the idea had to be defended publicly and bad actors confronted with their mistakes, whether deliberate or not.

Secondly, there was no systematic way of how to get a city to a zero waste state nor how to compare cities on this path between each other. Does a Zero Waste City mean the same thing in Italy as in Hungary? Who decides? And is it a status they can achieve once and then claim it for perpetuity?

All these problems, coupled with higher ambitions for the programme, eventually resulted in the Zero Waste Europe network coming together and launching a stronger pan-European label. **Mission Zero Academy** was established as an independent certification body to host the [Zero Waste Cities Certification](#)  (and a separate business one).

The certification is well structured, concrete where it matters and **third-party assessed**, removing ambiguity and severely reducing the chance for greenwashing. As a European-level label it also brings more prestige and higher visibility to cities working to get certified. Once cities start their journey with the core commitments and first measures, they are entitled to a temporary Candidate certificate that is replaced after the first successful audit. The audits then repeat every three years to ensure continuous improvement, but also to give them an opportunity to reach a higher star level of certification (1-5), when their prevention and waste management performance has improved. As of 2025, no city has reached the 5-star level yet, so even for the best practices the certification remains a driver of excellence.



Note: Since the certification is much younger than the City programme, many cities with zero waste programmes are still transitioning, and there is a great opportunity to support them in becoming zero waste.

An up to date map of certified cities and certified candidate cities is available [here](#) .

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 three main categories: economic, environmental and social.



Before reading on, think: What benefits besides reduced waste amounts would zero waste bring to a city and its citizens?

Depending on the local context, the benefits for each city will differ. For example, for municipalities in countries with established [Extended Producer Responsibility](#) (EPR) systems,² 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 mixed waste. For example Parma saved over 450,000 EUR in 2014 by switching to door-to-door collection.³
- 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 mixed waste to landfill or incineration.
- Lower 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.⁴



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.⁵



² You can read more about EPR in *Policy and Advocacy* chapter.

³ Zero Waste Europe (2018). [The story of Parma](#).

⁴ Ribeiro-Broomhead, J. & Tangri, N. (2021). [Zero Waste and Economic Recovery: The Job Creation Potential of Zero Waste Solutions](#), Global Alliance for Incinerator Alternatives.

⁵ Zero Waste Europe (2021). [The True Toxic Toll: Biomonitoring of incineration emissions](#)

- 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).
- 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 have been linked to harmful impacts on human health and development. There is also growing evidence showcasing the negative impact that toxic emissions from incineration plants are having on local communities.⁶

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.



Cities that become a certified Zero Waste City gain some **additional benefits**: third-party assessed performance following a standardised methodology, the right to use the label, international recognition as a frontrunner, access to expert assistance and tooling, and assurance of compliance with national/EU targets.

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.

⁶ Zero Waste Europe. [Food Contact Materials](#)



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.
- [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?

To get started, it helps to review the [Zero Waste Cities Certification criteria](#) and identify where your city currently stands within each of them.

Regardless whether you or the city are interested in certification, refer to these documents for potential scenarios and suggested steps:

- [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.

There are formal learning opportunities on how to become a successful city mentor, internal implementation expert and more. Refer to the Mission Zero Academy website and active [course list](#) .

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. A growing list of success stories from Certified Zero Waste Cities is showcased also on the [Zero Waste Cities Certification website](#) .

Closing questions for the reader to reflect upon:

- Which parts in this chapter were most confusing or difficult for you to understand? What do you think made them challenging?
- 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 do you want to know more about?

WASTE DATA BASICS

Authors: Mait Kriipsalu and Jaka Kranjc

Opening questions for the reader before reading:

- What do you want to know most about waste data?
- How would you define/describe waste data?
- What could be the most important data about waste?
- What data would you need to know in order to give good zero waste advice?
- From where to get the best data?
- How can we know if the data is reliable and of good quality?

PURPOSE OF COLLECTING WASTE DATA – WHY COLLECT DATA?

The more we know about our waste, the better we can manage it. Data is essential in setting recycling and recovery targets, calculating current waste treatment trends and identifying potential problem areas. In general, good data helps saving money. Accurate waste data provides a foundation for implementing effective waste management.

Consider this exercise:

Imagine you wanted to reduce the amount of food waste in your city. It's relatively easy to come up with preventive measures, but how would you know you are on track? Where and how would you get the data to verify the impact and even to be sure action needs to be taken in the first place?

What would your plan of action be? You can also write it down and see if you can get some more hints from this chapter.

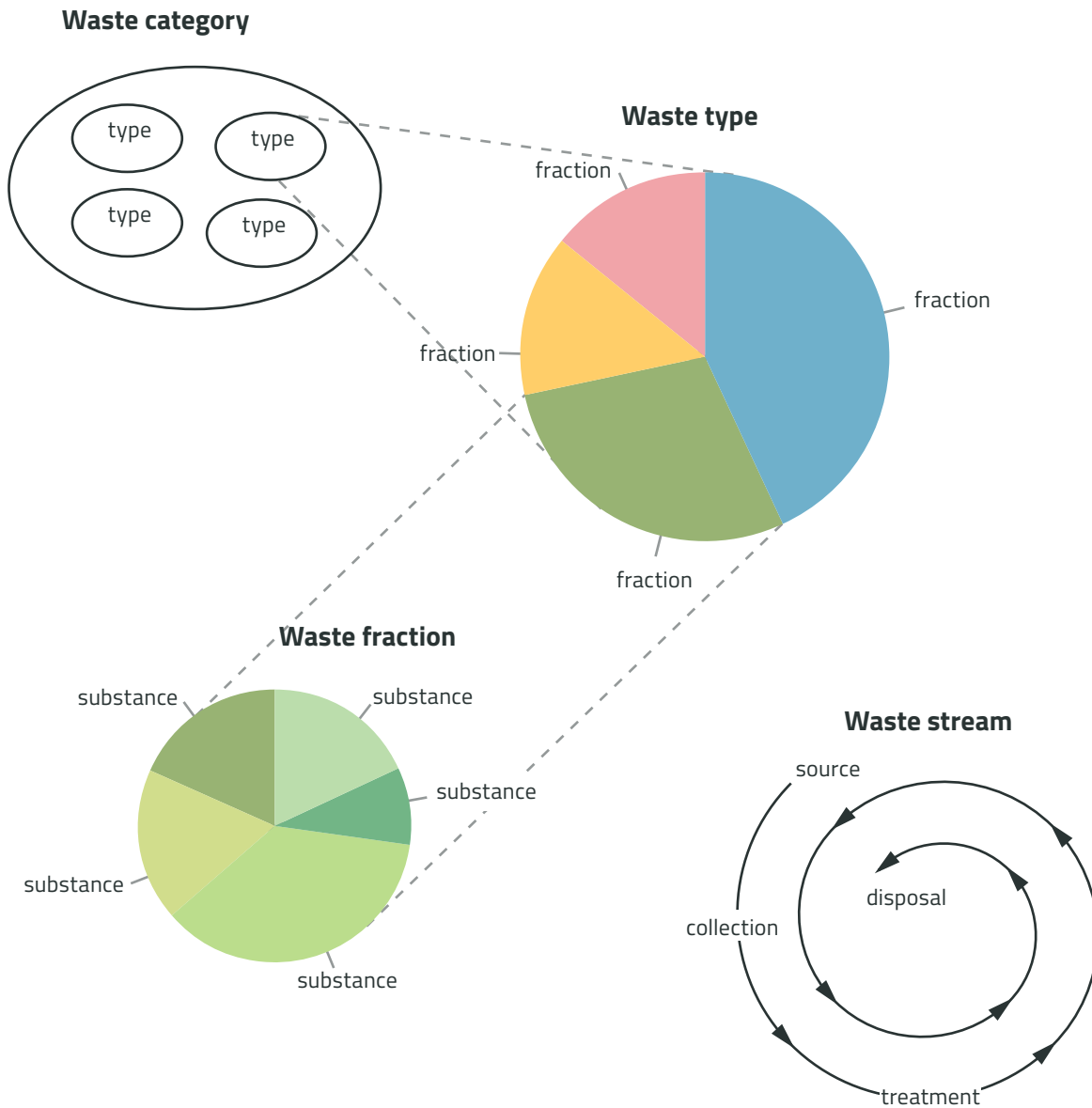
TYPICAL WASTE DATA TYPES – DATA ABOUT WHAT?

In general, all waste from a given country is called “total waste”. One of the essential tasks would be discovering what categories, types and fractions are there:



- **Waste category** is a broad class of waste with common characteristics like residential waste (coming from residential areas, connected to our everyday life or households) or construction and demolition waste. Even though different in details, the composition of such waste is predictable.
- **Waste types** are a subdivision of waste categories. For example, residential waste contains waste from households and waste from gardens.
- **Waste streams** define where the waste goes. At home, citizens source separate waste into fractions, which are then collected and managed as waste streams.
- **(Waste) material fractions** are visually sortable materials: paper, plastic, glass, food waste, etc. Usually this is enough to sort waste according to such categories at home. Each material fraction, however, contains many sub-fractions. For example, the paper and cardboard subcategories are: office paper, newspaper, books, magazines, cardboard, and corrugated cardboard. Sub-fractions are important on the material market, where prices are specified in great detail based on the material specifications. Material fractions are sometimes separated into sub-fractions at the source and further separated by quality classes in waste sorting facilities. It is a good exercise to check the local market of waste materials to see which quality classes are most appreciated.
- **Substance** defines the content material that can be described in a laboratory, like the content of water, dry matter or ash, nitrogen, heavy metals, calorific value, etc., or for instance the content of heavy metals in each waste plastic fractions.

Overview on how different waste data types relate to each other:



Typically, waste quantities are reported as:

- **Wet weight**, since this is easily measured. Wet weight is measured at the scale after collection and it is subject to change: it reduces because of evaporation or due to biological degradation; or increases due to rainfall.
- **Volume** based, since volume is easily estimated. Volume can be easily reduced by compacting; therefore it is not a reliable parameter. Knowing the bulk density (kg/m^3) allows transformation between mass and volume.
- **Chemical composition** from the laboratory is usually obtained from very small quantities (few grams) and expressed on a dry weight basis (dry matter, dry solids, total solids). It is accurate compared to errors, which are made in sample collection.

WASTE DATA SOURCES – WHERE TO GET DATA?



Before reading on, think: Where would you go to get waste data about your municipality? What kind of waste data can you find easily and what is more difficult to find?

Follow the waste stream and split the responsibilities at each lifecycle stage between possible actors. Therefore, **who is responsible** for collection (of every type of waste), where these waste streams end up (waste sorting facility, material recovery facility, composting site, incinerator or a landfill)? You can ask for data from the responsible body or from the authority to whom it reports.

You can ask for data from the responsible body or from the authority to whom it reports. In the case of a public entrepreneur, the data is likely public. In the case of private companies, the data is public as much as the contract allows or as transparent as the company is. If we do not know the responsibilities then we do not know with whom to talk about zero waste. This means we need to study the existing contract of waste hauler (if public). What kind of wastes are covered by these, and which wastes are not covered? It is also important to specify waste types which are separately addressed (e.g. household hazardous waste) and which collection is a duty of some other organisation (e.g. Extended Producer Responsibility organisation) to understand who is doing what, where and if there are any significant gaps.

First we need to know what waste is **collected**. Note: waste generated does not equal to waste collected. The waste hauler needs this data for calculating **fees**. The treatment facility needs this data periodically for design adjustments and frequently for calculating fees. Data on kg per street address is not very useful, unless we know the number of inhabitants per address.

Costs associated with waste are at the centre of many calculations and decisions about how to run waste management. It can be insightful to calculate the total sum per year of waste related costs in a particular municipality. One should know how much a person or household is paying for waste collection and treatment/disposal. One should know what is the current gate fee¹ at the landfill or incinerator. The cost of any collection and/or treatment method proposed by the zero waste practitioner, which is comparable to existing one, would be acceptable to waste producers.

Some waste data is collected because it is mandatory. This is when authorities require information i.e. the types of waste being disposed of at landfills, the amount of waste that is incinerated, and what materials are treated by the recycling sector. Publicly available data can be found in national databases. Also Eurostat offers different datasets, for example: [waste generation and treatment](#)  in all Member States, [key waste streams and shipment statistics](#) .



¹ Gate fee is the fee paid at the reception to any waste treatment plant. It does not include transportation cost, but it does include the cost for processing of waste and taxes.

DATA ACCURACY AND PRECISION – IS THE DATA RELIABLE?



Before reading on, think: What makes data reliable? What makes data unreliable?

Perfectly representative data is rare, because of:

- Spatial (area-wise) variation of waste;
- Temporal (time-dependant) variations;
- Uncertainty (duration of waste audit, amount of waste studied, sampling errors).



It is important to also know the **age** of the data, the best being of course data from the latest year. Older data series, however, offer trendlines. So we should not ignore data from the past. Data can be illustrated by drawing a time series chart to identify basic trends more easily.

One common pitfall involves data about **separate collection and recycling**. People often refer to them interchangeably when talking about collection performance, so it is important to verify whether the numbers are for actual recycling or just separate collection. The latter is a good proxy, but because of process losses and impurities it will always be lower than the former.

Other waste related targets need scrutiny for the same reasons. Sometimes legal definitions are involved, sometimes what is actually being measured is surprisingly different from what the name suggests and sometimes there are multiple valid methodologies for computing the targets, potentially giving significantly different (or incomparable) results. You can read more about it in the *Waste Policy and Advocacy* chapter.

For reasoning and advocacy work we often also use qualitative or even non-waste related data. In these times of ubiquitous access to the internet, it is progressively easier to get data on whatever we desire. Often however the true sources are not given, data is misrepresented, omitted or forged and reuse becomes tricky. The Full Fact team (and several others) have prepared a useful toolkit for detection of doctored images, fake news and other mis- or dis-information. Explore it at [Full Fact Toolkit](#) .



Using proxy data, which means using related data to reason about what we are actually interested in, has its place in circular economy discussions as well. While waste and economic impact data is comparatively easy to get or calculate, the impact on environmental and societal pillars of sustainability is **harder to quantify**. For example, it is impossible to measure the climate impact of a zero waste training, but one could (partially) attribute some future actions of the learners to it and perhaps those are easier to model. Another example would be using sales figures, event counts, and other indirect ways to measure a change in behaviour, since doing it properly with a representative population sample, twice, can be prohibitively expensive. In whole, assessing behaviour change is a complex topic in the field of social sciences, where a lot of elements need to be considered and planned for. You can read more about it from the *Learning Assessment* chapter of the Trainer Handbook.

When evaluating the veracity of data:

- prefer data from reputable sources (e.g. official) when available,
- prefer data produced with well defined methodologies,
- prefer local, regional, national, international data in that order,
- prefer measurement data to modeled data (academic or not),
- prefer recent data,
- prefer written to spoken data, primary sources to secondary sources or media quotes,
- prefer large sample sizes if sampling was involved,
- consider whether it is complete or cherry-picked.



MUNICIPAL SOLID WASTE

The EU defines **municipal solid waste (MSW)** as waste from households and waste from other sources, such as retail, administration, education, health, accommodation, food and other services and activities, which is similar in nature and composition to household waste.



- ☒ MSW includes waste from park and garden maintenance, such as leaves, grass and trees clipping, and waste from market and street cleaning services, such as the content of litter containers and street sweepings.
- ☐ Materials such as sand, rock, mud or dust, and waste from activities such as production, agriculture, forestry, fishing or construction and demolition are excluded from the scope of MSW.

MSW constitutes approximately 7-10% of the total waste generated by weight, but is amongst the most complex ones to manage, as it is a mixture of many individual waste types and materials. So it is **one of the key waste streams to monitor** and regularly collect data about. One good way to understand this heterogeneous waste better is to conduct a waste composition audit.



THE ROLE OF WASTE AUDITS

Waste audit or assessment is the only exact option for learning the composition of MSW. In general a large sample is chosen from collected MSW, which is then mixed up to be more uniform. A smaller sample to analyse is then chosen from it. Finally, through sorting (characterisation) of individual waste fractions contained in the sample, an overall composition is concluded. By averaging several samples the real composition can then be properly estimated.

The purpose of a waste characterisation event must be clearly determined because the data will later be used for solving specific problems. This means that it is important to think into which and how many fractions the waste should be sorted in the analysis. For example, adding a category for nappies would enable you to measure the efficacy of a city-wide reusable nappies programme. Typically they are aggregated with other uninteresting residuals.

Example: National MSW and mixed MSW composition analysis for Slovenia (simplified), MOP, 2019

Waste fraction	Reported share in MSW	Sampled share in mixed MSW
Paper	24%	10.3%
Biowaste (organics)	22%	28.2%
Plastics	8%	14.3%
Glass	5%	3.2%
Metals	8%	2.9%
Textiles	3%	8.9%
Composite packaging	/	1.6%
Wood	7%	1.5%
Batteries	0%	0.1%
E-waste (WEEE)	2%	0.8%
Other	21%	28.4%

What to expect? As a rule of thumb, one third of our municipal waste is biodegradable/organics, another is paper products, and the third part is all the rest combined. About two third of municipal waste by volume is packaging, and by weight is biodegradable waste.

In developing countries the amount of organic waste is higher, but the amount of paper and plastic is lower. This is because of different consumption habits. However, since plastic products are more ubiquitous and voluminous, not biodegradable and more likely to end up as litter, appearances of what waste fraction dominates can be deceiving. Waste audits can dispel such illusions. Bigger waste amounts also don't necessarily mean bigger problems, it is more about the characteristics of waste. Even a small amount of toxic waste could cause more problems than huge amounts of other waste.

Looking at the table above what is the% of – waste by weight or volume?

It is always good to specify in which units the waste is described.

USEFUL WASTE DATA UNITS

The **quantity of waste** per defined time and per unit is called a unit generation rate. Most often weights should be expressed as such "unit generation rates" to make data fairly comparable. Examples:

- kg waste/capita/year, (also ton, m³, number of bins, etc.);
- kg waste/employee/year;
- kg waste/m² of building demolition;
- kg waste/hospital bed/year.



For municipal waste, the most common unit generation rate is in kg/person/year. Since the number of people per household is a flexible character then sometimes the rate kg/household/day-week-month is used.

Worldwide, waste generated per person per day varies widely, from 0.1 to 4.5 kg. In Europe, one person generates 1 or 2 kg of MSW per day. Assuming that people are quite similar, one should start with assuming that every person generates ONE kg of MSW per day.

Exercise:

Multiply the number of inhabitants (in your city or country) by 1 kg and by 365 days per year. This gives you a total amount of MSW per year. It is in kg! To get it in tons, divide it by 1000.

About half of this is generated at home, and half is generated elsewhere (at work, dealing with hobbies, sports and leisure). This is your starting point to target waste reduction or improve source separation (at home or in the office?).

In order to have comparable and reliable data on waste generation and treatment in all EU countries, clear definitions and a common understanding of waste classification is necessary. Classification of waste in the EU for administrative purposes divides waste into 20 classes.²

² [Commission Decision 2000/532/EC](#)

Each waste type is characterised by a six-digit code:

- first two digits identify the source generating the waste, e.g. means waste category (20 is municipal wastes),
- next two digits waste type (20 01 is separately collected fractions),
- and the last two digits indicate it in more detail (20 01 01 is waste paper and cardboard; 20 01 02 is glass etc).

In Europe waste management prices are expressed in euros (or other local currency) per ton or per kilogram.

DATA PRESENTATION

To make understanding of data easier it is important that we pay attention to how we present it. Any form of communication has many nuances and dimensions due to the peculiarities of our perception. One might think a chart is a chart, but consciously or subconsciously we do care about things like colour choice, line thickness, size and visual noise. As with any style of communication, clarity is key, so simplicity is usually preferred. That is something we have to deliberately implement, as the software tools we commonly use force needlessly cluttered designs on tables, charts and other representations of data.

Check out an excerpt of Edward Tufte's seminal [The Visual Display of Quantitative Information](#)  for a detailed explanation of why certain data presentation practices are bad and what to replace them with.



Check out also the [interactive Data Viz Project web toolkit](#)  helping users pick the right visualisation for their data. It sports beautiful examples and explanations of why particular representations are used, when and how.

For basic data collection and what is good for a zero waste practitioners to know about their municipality, the data gathering assignment in the Annex 1 of the Zero Waste *Basics Curriculum* can be consulted.



ZERO WASTE CITIES AND BUSINESS CERTIFICATION

All certification schemes rely on some form of verification of state, progress and intent. In other words they require good access to information, data. The Mission Zero Academy's Zero Waste Certifications are no different. In fact, one of the reasons for their creation was the poor state of affairs of other certification options when it comes to waste and waste prevention data. Too many use unambitious checkboxes or free form fields, with weighing rarely being present, let alone mandatory. As such, the resulting claims often border on greenwashing, which is unacceptable.



Before reading on, think: Why could it be considered greenwashing and why is weighing so important?

Waste quantities are the main indicator we are interested in and weight is what is used for official reporting and waste management service cost determination. Without a solid basis for target setting and monitoring, any such goals and subsequent claims will be impossible to verify. This matches several types of greenwashing (absence of proof, vague or false claims), depending on the severity of the claims.

There are three main ways one can interact deeply with the Zero Waste Certifications and all three roles have different data related needs. All require a good understanding of the certification in question, its criteria and the detailed points breakdown.

- 1. As the implementation officer** of the applicant organisation. You will be expected to provide evidence on meeting all required criteria and any points-based ones you opt for. Some of it may be existing official or research data, but some you will have to gather as you go. Several points-based criteria require excellent evidence, so familiarize yourself with them and design their particular zero waste measures with a data lens in mind. Your mentor may help with ideas, methodologies and data gathering itself – use them to your advantage.
- 2. As the Zero Waste Mentor.** Your role is to help the implementation team to understand the criteria correctly, facilitate data gathering and clear up any misconceptions about what constitutes valid proof. Your role is also to be the interface with the auditor, making sure the data and evidence is as easily understandable as possible. Depending on your situation, some criteria may be trivial to account for, since there are binding national or regional mandates and the city/business has no choice, but to be compliant. Some are harder to get data for, but the points breakdown documents contain more ideas and instructions. Do not forget the existence of the big Zero Waste Europe online library and the option to check how other mentors and implementation teams tackled a particular data challenge.
- 3. As the Zero Waste Auditor.** This is the only role that will not generate new data, *only* verify and synthesize what others have provided. You have the power to ignore what you consider invalid or irrelevant data and to request any reasonable substitute. In the extreme case, where crucial information is missing, you can delay the audit decision and make it contingent on getting the required data (which also has to fulfill the requirements of its criterion). You can read more about it in the audit guide provided by Mission Zero Academy.

Keep in mind that not all data can be gathered retroactively, so plan for it accordingly already when designing zero waste measures.

Exercise:

The optional criterion C8 of the cities certification states: “The municipality collects and publishes data on the economic and societal impact of the zero waste plan.” How would you gather evidence to show such impacts?

Think first about what kind of data and where you would start looking for it. Then you can check our ideas at the end of this chapter.

DATA FOR ADVOCACY

Advocacy is all about convincing the people in power to adopt your view on a particular matter. That can be achieved through veritable propositions or manipulation, but either way some data will be needed. Read the *Waste Policy and Advocacy* chapter for a broader view, and *Action Guide for Local Policy* for practical implementation.

Decision makers care most about data that is already somehow legislated: targets, lower and upper bounds and other limit values, costs/prices/profits, and well known benchmarks. Making arguments using such data will be easier, as it is much more likely the target audience will have a good understanding of the underlying details. Still, regardless if you are talking to topical experts or not, strive for simplicity when presenting your data, models, findings. As with any other communication, clarity breeds understanding, which is a prerequisite for others to adopt your stance.

When arguing for or against something, data quality can be a point of contention or even the core of the argument. Ensuring you are operating with demonstrably best available data, whether official or not, can be a powerful (if obvious) strategy when advocating for change.

The often harder challenge is knowing whether you or your opponents have enough data or if there are some blind spots. It is natural to want to skip arguments against one's case, but it is a form of lying through omission. For example, proponents of chemical recycling like to ignore the high reject rates (only wanting to deal with a small fraction of the incoming waste) or that typically the technology has only been used for waste disposal (plastics to fuel), not recycling. So it cannot fully replace other solutions, only complement them.

When a decision is to be made about waste, consider **what is the driving reason behind it**, since that will impact what data can best serve you. Is it cost, cleanliness, legislation, noise pollution, spatial constraints, job creation, health or something else.

Exercise:

When you burn 100 t of municipal solid waste, how much landfill capacity do you save? Is the output waste comparable to the input one?

If the question is too hard, revisit it after reading the *Waste Treatment* chapter. In essence it is similar to the chemical recycling example. One often hears that incineration just makes the waste go away, but think about it – can you really burn away metals, glass, mineral waste? Even in ideal conditions, there will be some leftover unburnt material and ash, which typically accounts for 25% of the input weight. Because fly ash is hazardous waste, it can only be deposited in special landfills. So it saves some regular landfill space, but requires rarer space at the same time. It is a tricky question showing how details matter.

Some ideas for the exercise about measuring the economic and societal impact of the zero waste plan.

Possible data sources:

- municipal budget lines for waste management and public space cleaning;
- waste management performance difference calculated in weight (for example 10 kg per capita per year) coupled with management prices per weight unit (collection, treatment, disposal);
- number of waste and cleanliness related complaints;
- green jobs created;
- attitude change in satisfaction polls.



Closing questions for the reader to reflect upon:

- Which parts in this chapter were most confusing or difficult for you to understand? What do you think made them challenging?
- How easily can you access your local and national waste data? Do you trust it? Why or why not?
- What kind of data would be helpful for promoting zero waste solutions?
- To whom would you go with this data?
- What do you want to take with you from this chapter?
- What do you want to know more about?

WASTE COLLECTION

Author: Mait Kriipsalu

Opening questions for the reader before reading:

- What do you want to know most about waste collection?
- What waste fractions¹ are collected separately in your municipality? What companies are involved? How is the collection organised?
- Who is responsible for organising waste collection?
- How transparent and understandable is the waste collection system?
- What makes a successful waste collection system?
- How does the method of waste collection and the quality of waste collected influence material recovery?
- What do you need to consider before selecting which collection system suits your local context the best?

¹ for waste unit terminology, check the *Waste Data Basics* chapter.

Waste collection is a generic name for a series of activities on how waste from the location of its generation flows to the treatment or disposal facility. It includes:



1. The gathering of waste, including preliminary sorting where waste is generated, how waste is presented for collection, and preliminary storage.
2. Mechanical processing of waste for the purposes of transport without changing the composition and nature of the waste.

Let's start with an exercise.

Design a waste collection system for scenario 1 or 2 (select one). Do not yet read the chapter to the end, try to see what you can come up with on your own. Just do the brainstorming!

What would you suggest and why?

Scenario 1

- The municipality has 200,000 inhabitants, and the population density is 4,200 pers/km².
- 70% are high-rise apartments, 30% are private houses with gardens in the suburbs.
- The total waste per capita per year is 550 kg, which includes a lot of waste coming from local cafes and restaurants.
- The average income of local residents is below that of the European Union (EU). Most residents' income comes from the tourism and hospitality sectors.
- Challenge of the language diversity: 5 different languages are spoken by residents.
- The municipality partners with the local private waste management company, which is responsible for implementing the waste and separate collection systems.
- Currently there is a 35% separate collection rate in the municipality:
 - Glass, paper and cardboard, plastic bottles and metals are collected through a drop-off system.
 - There is no separate collection system for organics.
- Waste is transported to a distant incineration plant, which has a contract for 6 years.
- There is one public recycling centre for hazardous, bulky, and garden waste; which is 10 km outside the town, and only being used by 5-10% of the town's population.
- Residents pay a flat tax rate to the municipality regardless of the amount of waste they produce or recycle.
- The municipality is considering introducing a Pay-As-You-Throw (PAYT) scheme to create a fairer pricing system.

Scenario 2

- The regional government consists of 4 small municipalities of 2,000-3,000 inhabitants, each with 10-15 km distance between them. The population density is 820 pers/km².
- There are no high-rise buildings. 100% are private houses with access to a garden.
- Total waste per capita per year is 350 kg.
- The average income of local residents is above that of the EU.
- An additional 3,000 workers commute to the region daily from neighbouring countries.
- The regional government has a contract with a private waste management company to perform all municipality-driven decisions.
- There is some separate collection for mixed recyclables, including biowaste.
- Mixed waste is disposed of in a landfill with a gate-fee² of 200 euros/ton.
- There is no central drop off location for hazardous and bulky waste; the service is available only on demand twice a year.
- Currently, residents pay a fixed rate for mixed waste and 50% less for recyclables.

What are the key factors about waste collection that you should take into account?

What kind of waste streams/materials do you plan on collecting and why?

How would you justify or explain the waste collection system you have created?

After making your plan, continue reading the chapter and see if it gives you further ideas.

Waste collection is an **organisational step** between those who generate waste and those who run the waste management system. In typical contexts, collection of Municipal Solid Waste (MSW) is organised and managed by local municipalities. They determine the conditions of how municipal waste is collected. Proper collection avoids uncontrolled dumping and littering, and is part of public sanitation. The waste company may be private or municipal. Private companies compete through public procurement.

Waste collection is a **technical step** between the place where waste is generated and the place where waste is treated. Collection technology determines which treatment technologies may be feasible in the further processing of the waste. Waste collection often accounts for two-thirds of waste management costs, and must therefore be cost-effective and optimised.

There are many technical and organisational issues to consider when designing a waste collection system:

- Containers for the waste and recyclables.
- Collection vehicles.
- Collection frequency.
- Collection routes and logistics.
- The fee scheme for citizens and businesses.

Whatever you suggest, you have to communicate it to citizens as clear communication is essential. You can read more about it in the chapter *Engaging People and Awareness Raising Activities*.

² Gate fee is the fee paid at the reception to any waste treatment plant. It does not include transportation cost, but it does include the cost for processing of waste and taxes.

Collection and transportation of waste is the most important part of the waste management system for many reasons, which we'll discuss in this chapter.

COLLECTION SYSTEM LOGISTICS

Separate collection is the cornerstone of high-quality recycling.

Separate waste collection the practice of sorting waste by type and nature to facilitate further handling after collection. How waste is separated and into which fractions is determined by local legislation.



It is important to decide how the residents give source-separated recyclables to the waste company. It can be organised in a way that they **bring** it to the designated recycling area (e.g. a recycling centre) or the waste company **takes** it from each doorstep where waste was generated (door-to-door or kerbside/curbside system).

Door-to-door (kerbside) collection is proven to be the most effective model for those wanting to collect better quality materials, but is more expensive to set up and run. Door-to-door collection is common in many countries such as Italy, Germany, Austria, and Belgium. Collection is commonly weekly or bi-weekly. When you separate key recyclables, including, most importantly, the organics, which are the most fermentable and therefore require more frequent collection, you can reduce the frequency of residual waste collection to once a fortnight (given that it will mostly include lightweight packaging).

In the most intensive kerbside schemes, such as in Italy, a capture rate³ of 80-100 kg/capita per year of just food waste is commonly achieved, equating to a participation rate of around 80%, with less than 5% impurities (waste other than organic). The capture rate with public bins (bring-system) is typically lower than for kerbside collection, around 20-50 kg/capita per year, and impurities are considerably higher, often reaching averages of 10-15%.

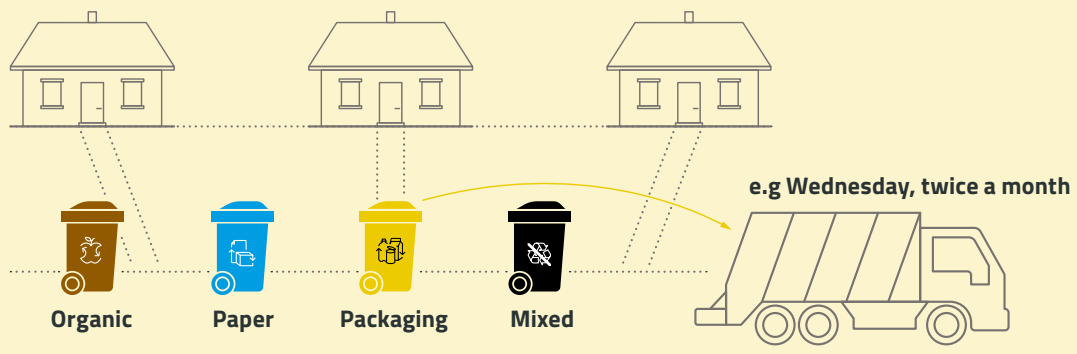
³ Capture rate is the % of the recyclables captured from separate collection. It is calculated by dividing the weight of recyclable material collected for recycling by the weight of all recyclables in the waste stream.

Examples of kerbside schemes

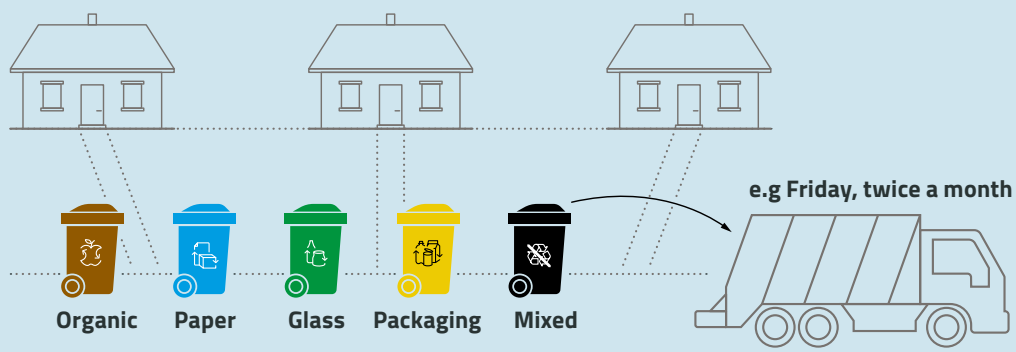
3 streams



4 streams



5 streams



Collection days and frequencies vary across the world. In hot climates collection is organised more often, above all for organics and residual waste. The colours of the containers for different waste streams may vary from country to country.

Bring-systems (where people have to bring their waste to dedicated points) rely on sparsely placed waste bins or recycling centres. They are anonymous; therefore, the quality of materials is lower.

In the Global South, the informal waste collection system offers a livelihood for many waste pickers. However, it is preferable to integrate them into formal networks to protect their health and rights. One example of such [zero waste cooperatives](#)  can be found in Tanzania.

Waste fractions and streams

The list of waste fractions which are source-separated could include:

- **Waste paper.** Usually newsprint, office paper and paper packages are collected together, including corrugated cardboard.
- **Mixed packages.** Packages are the largest waste fraction by volume, but it contains numerous materials and mixes. The easiest way to collect it is as it is. Mixed packages are later separated in the waste facility. In some countries, soft plastics and hard plastics are collected separately, often referred to as PMD (Plastics, Metals and Drinking containers) given their similar characteristics and ease of sorting.
- **Glass bottles.** In some countries, glass is separated according to colours: transparent, green, brown. In others, mixed colours are collected and later sorted by a sensor-sorting system.
- **Organic waste.** The main objective would be receiving food waste from households. Food waste should be collected at least once a week due to its fermentability and smell.
- **Others.** PET bottles without deposit, batteries, textiles, shoes, cooking oil and many other site-specific fractions are collected in some places..



Before reading on, think: Why are these waste fractions collected separately most commonly? Why, for example, might metals not be collected separately?

Bins are marked by colour to simplify collection. Unfortunately, no uniform EU-wide colour coding exists yet. However, there are some [initiatives](#)  for standardising colour coding that inspired a [harmonisation process](#)  at the EU level.

An example from Estonia:





Why would it be good to have the same colour coding for all waste fractions everywhere? Why do you think it isn't so already?

Organic or biowaste is the sum of two fractions of biodegradable waste:

- Park and garden waste (green waste), and
- Household kitchen waste (food waste).

The main output of biowaste recycling is a stabilised and sanitised organic material. Depending on the recycling process, the material can be digestate (anaerobic process) or compost (aerobic process), which are both excellent at improving soil health.

Major changes in kitchen waste collection took place across the EU in 2024, when separate collection of biowaste became mandatory. The composition of collected biowaste relates to cultural and social factors. In areas with single-family homes, green waste is often the main fraction found in the waste bins – particularly in spring and autumn. In regions with many high-rise apartment buildings, food waste is the main fraction throughout the year. This has to be taken into account when designing the collection system.

Centralised 'brown bin' collection of organics may be combined with community composting and home composting. This helps save municipal costs with less collection needed, whilst also connecting households with a more natural-based solution for managing their food scraps.



Before reading on, think: Why does organic waste need special consideration when planning a waste collection system?

Collection frequency

How frequently should waste collection take place?

Collection frequency is usually higher in hot climates and lower in cold ones. More frequent food waste collection tends to improve public acceptance and participation, as it prevents unpleasant odours. Food waste must be collected even if the container is not full, whereas other types of waste can be collected less frequently, as they can remain in a bin for extended periods without any negative effects.

The fee system

What do waste collection fees look like for residents?

The fee system plays a key role in encouraging participation in separate collection schemes. A **Pay-As-You-Throw (PAYT)**⁴ fee is typically made up of two parts: a fixed part (preferably covering 60–75% of collection costs) and a variable part that rewards good sorting and penalises poorly separated waste. Other flexible fees include purchasing designated bags (bags with municipality logos or stickers, indicating which waste is collected, and/or that it is paid for) or purchasing differently sized bins (one bin for each type of waste). PAYT schemes should encourage residents to generate less mixed waste, both through better sorting and, most importantly, by consuming less. They can be applied to both single-family homes, as well as apartment buildings, where additional technical solutions may be required to ensure fairness, such as bins with keycard access (if pre-paid bags are not used).

A simplified image on Pay-As-You-Throw (PAYT) system:



⁴ More info from: [Pay-as-you-throw](#) , Zero Waste Europe

Bins and containers

What does it matter what kind of containers do we have?

The way waste is stored is a compromise between being both affordable and attractive for residents, as well as safe and efficient for waste collectors and route planners. To overcome confusion between the different shapes and sizes of waste bins and containers, they are often referred to as waste receptacles:

- **Manually handled receptacles.** Small plastic or metal bins with no wheels offer flexibility in collecting small amounts of waste at the source. They are manually handled and carried to the collection vehicle. If waste is light, then carrying a bin is faster than rolling a bin. The vehicle does not need a bin lift.
- **Containers.** Plastic wheeled bins were introduced to increase workers' productivity and reduce workload because wheeled bins are easier compared to no-wheeled metal bins. Wheeled plastic bins are used worldwide, not only for residential waste but also for commercial, light industrial waste and source-separated materials. In Europe, standards exist for both two- and four-wheeled bins.
- **Large containers.** Larger containers have a volume of 1,5–12 m³. They are emptied into a collection vehicle on-site; or transported individually to the treatment or disposal facility, and back.
- **Underground receptacles.** In cities with narrow streets, it is difficult to find space for bins. Cities try to overcome this problem by placing waste containers in underground pits. These are emptied by a small crane. Underground automated waste conveying systems along with robotic sorting systems will become typical in highly developed and densely populated areas.
- **Bag instead of bin.** Sometimes there is no space or budget for bins. An alternative is collecting waste in plastic bags. If waste is light, then picking up a bag is faster than rolling a bin. Paper or plastic sacks are manually carried to the collection vehicle. A problem with bags is the vulnerability to sharp items. Spilled waste from broken bags creates littering but sharp objects may also injure workers. Sometimes a bag-system in addition to the traditional bin-system is used to collect seasonal waste, e.g. park waste in the autumn.

Containers may have personalised electronic locker systems. Dedicated electronic keys or cards are measures, which intend to reduce and prevent contamination with other materials; or prevent using the container by non-residents of the particular area. The last one is a question of funding the collection, which is often paid for by local taxpayers.

Choosing the right receptacles depends on the type of area where waste is collected, how much room is there for waste collection, who and how a person or a truck moves the waste, and if there is a need to change the locations of waste collection points at certain times, etc.

WASTE TRANSPORT

Waste transportation refers to the shipment of waste from its point of origin to its destination. It also includes the loading and unloading of waste into the collection truck.



If the transportation distance is long then waste may be loaded onto larger trucks at transfer stations. A transporter of waste does not become the owner of the waste if its only task is to deliver the waste shipment to its destination, unless otherwise agreed by the contract. The distance between the collection routes and the waste's destination is an important factor to consider when designing a collection system, as it can significantly affect **greenhouse gas (GhG) emissions**.

Waste collection vehicles

Waste transportation is expensive. While using bigger, heavier trucks may seem like a good way to optimise efficiency, EU Directives have set a maximum permitted truck weight (see [one example](#)  here). Compacting waste is therefore important, as it reduces air-filled space and increases the load that can be carried.

The trucks that handle very large containers either roll them on and off (multilift-type) using hooks or winches, or lift them (lift dumper-type) using chains and booms. Multilift systems are more practical as the driver does not have to leave the cabin.

Multi-compartment trucks enable several waste fractions to be collected at once. The main drawback is that the vehicle needs to be unloaded as soon as one of the compartments becomes full, even if the other compartments remain empty. This can be mitigated by using reliable data on local waste generation patterns to better plan collection rounds.

Now revisit your initial waste collection proposal from the beginning of this chapter and if needed, revise it based on what you have learnt.

Based on your plan, what kind of communication would you design for households on the following points:

- Waste fractions you suggest to collect
- Types of bins and how they are labelled
- Collection rounds frequency
- Fee system

What do they need to know about their waste collection? For example, how do they learn and remember the schedule?

For guidance on planning communications, see the *Communication And Storytelling* chapter..



Additional reading on separate collection:

- [Guidance for separate collection of municipal waste](#) 
- [Guidance on Separate Collection](#)  – focus on biowaste collection

Closing questions for the reader to reflect upon:

- Which parts in this chapter were most confusing or difficult for you to understand? What do you think made them challenging?
- What kind of changes would you make to the waste collection system in your municipality?
- What do you think is the key challenge facing your municipality's waste collection system?
- What do you want to take with you from this chapter?
- What do you want to know more about?



WASTE TREATMENT

Authors: Mait Kriipsalu, Jack McQuibban and Anastasiia Martynenko

Opening questions for the reader before reading:

- What do you want to know most about waste treatment?
- Why is it important to know about waste treatment methods as a zero waste practitioner?
- How do you think a municipality or waste company thinks about waste? Is it the same as you?
- What kind of waste treatment methods do you know?
- What are the main arguments that determine which waste treatment method is selected/proposed?
- What kind of waste treatment methods are in use in your municipality?
- What do you think makes a waste treatment method good or bad?

We are not placing zero waste solutions into an empty space, but in an already existing infrastructure. A zero waste practitioner should know the basics of waste management, e.g. waste hierarchy and technologies which are described in it. It's important to know the global, EU and national target values, to be informed about the roadmap of waste management and circular economy. It is necessary to link waste management with other sectors, be it transport, energy or the building sector. Municipalities, but also producers of our consumables have obligations and responsibilities which are set by law. Zero waste has to contribute to fulfilling the legal responsibilities of municipalities and waste companies; it has to become beneficial.



Before reading on, think: Why has your municipality selected the waste treatment options it has? What do you think were the reasons?

Future perspectives in Waste Management

Typical driving forces in waste management are:



- Public sanitation;
- Prevention of littering and illegal dumping on land and sea;
- Material and energy recovery;
- Savings and economic incentives;
- Producer responsibility;
- Need for remediation;
- Urbanisation and the need to use less public space.

Some of the new challenges:

- Achieving Sustainable Development Goals – these 17 UN-defined global goals are fundamental for mankind to preserve opportunities to live in dignity and prosperity across generations. The goals cover ecological, economic and social sectors.
- Widespread use of toxic chemicals in products and packaging, which results in air, water and soil contamination during waste treatment and risks to public health.
- Lack of resources and secure supply chains – we are running out of metals which could actually be harvested from waste.
- Resource efficiency – we must improve the utilisation of resources through smart products and eco-design.
- Climate change – proper management of biowaste and reduction of CO₂ and CH₄ will help to slow down the speed of climate change.
- Alternative energy sources – energy-rich waste fractions can provide electricity and hot water in urban areas, and they replace fossil fuels.
- New waste streams – e-devices, flat screens and IT-equipment, smart clothes and houses, internet of things, nanomaterials etc., will require treatment methods which did not exist before.
- Globalisation – we need to learn the treatment of materials which do not exist in each of our countries.
- Ageing population – elderly people have different patterns of consumption.

- Circular economy, life cycle thinking, and green jobs – to replace the linear production and consumption routes.
- Extended producer responsibility – to finance collection and treatment of particular waste streams.
- Artificial intelligence and robotics – to allow automated waste processing.
- Crisis waste management – permanent or temporary waste collection systems, e.g. for refugee camps or in post-war zones.
- Zero waste – to manage resources in a manner that there is no need for waste disposal.
- Urban Mining – to handle our entire urban environment as a future quarry of new materials, etc.
- Improving treatment plants and facilities, accommodating them with different waste types.
- Decreasing the gap between policy makers and citizens to avoid conflicts when taking important decisions (for example a new anaerobic treatment plant) – public debate.
- Avoiding “waste tourism” (waste made in a place but treated somewhere else because of the lack of treatment facilities).
- Bureaucracy.
- Non-technological obstacles (laws and regulations).

More focus on biowaste is needed. Increased GDP will affect the amount of food waste along its production chain, and leftovers at homes. The organic fraction will be more dominant in municipal solid waste (MSW), and the greenhouse gas (GhG) challenge has to be faced. Sustainable and cost effective treatment of biowaste will be a combination of composting and anaerobic digestion (waste-to-bioenergy), and nutrient recycling will offer the best solution. Bio-refinement of functional compounds from organic wastes will boost, but it will take ages to incorporate it into the waste management system on a large scale. Cross-border transportation of waste materials will become inevitable and should be seen as everyday practice, provided that it is well controlled by authorities.

Integrated waste management

Integrated solid waste management means the strategic approach to sustainable management of solid wastes covering all sources and all aspects, like:

- Pattern of waste generation,
- Source separation and waste segregation,
- Collection and transfer,
- Secondary sorting,
- Treatment,
- Recovery and disposal in a combined way,
- Production of secondary raw materials with an emphasis on maximising resource use efficiency.

Waste is separated into several fractions rather than mixed in one; quality is evaluated and upgraded whenever possible; and waste is used as material, rather than disposed of in landfills. Integrated waste management employs several waste control and disposal methods such as source reduction, recycling, reuse, energy recovery, including incineration; and finally sanitary landfilling, to minimise the environmental impact of waste streams.

WASTE TREATMENT

After collection, waste loads arrive at some kind of treatment facility.

Waste treatment refers to any activity that enables material recovery.¹ The waste sector prepares waste for recovery or disposal by using mechanical, thermal, chemical or biological processes on waste. This also includes sorting and packaging of waste for transport.



By treatment we aim to make waste more easily manageable by:

- Reducing the quantity of the waste,
- Reducing the hazardousness of waste,
- Improving the amount and quality of recovered materials to increase the wholesale price,
- Facilitating its management or disposal.

Reduction of volume is achieved by crushing, shredding, and compacting the waste.

Sorting into individual fractions takes place in waste treatment facility through:

- **Hand sorting** (hand-picking, manual sorting). It is widely practised, but it is slow, dirty, unpleasant and inefficient. However, it is flexible and easy to organise.
- **Mechanical sorting.** Sensor-based sorting in the near infrared spectrum (NIR) is well established in Europe. AI-based robotic sorting is on its way, combining computer vision with machine learning to classify more items or increase accuracy of NIR scanning.

Properties of waste can be altered by washing, moistening, drying (thermal, biological), melting and granulating. Baling and storing is required for logistic purposes. Baling includes compacting into uniform shapes, and wrapping to avoid quality loss during storage and transportation. Mechanical treatment is not a goal by itself, but rather a preparation step that enables further recycling.



When reading about different waste treatment methods below, try to think about their advantages and disadvantages first yourself, before looking at the lists.

Every method has them, they might be advantages or disadvantages just from someone else's perspective (like an elected politician or the owner of a waste company). Consider what treatment methods could be implemented overnight, and what methods require years-long planning; which can be implemented at any size or scale, and which require huge amounts of waste to justify cost. Learn who are the owners of waste management facilities to understand their role in decision-making, planning and in actual work.

¹ For waste management terminology, check *Zero Waste Basics* chapter.

BIOTREATMENT

Organic wastes are materials originating from living sources like plants, animals, and microorganisms that are biodegradable and can be broken down into simpler organic molecules. This happens in natural cycles in our environment thanks to microorganisms. In urban areas, however, we cannot rely on natural processes and have to use technology. Organic waste recycling is the process in waste management where organic wastes are recycled into useful products.

Composting on industrial scale requires segregating the organic waste from other waste materials at the source to ensure a high-quality end product – compost.

Composting is the process of decomposition of organics by soil organisms resulting in the recycling of nitrogen, phosphorus, and other soil nutrients into humus-rich components.



Composting differs from the natural degradation process because input of oxygen and moisture, temperature, and degradation process as such is monitored and controlled by the operator. There are quality standards for the compost, and the facility has to meet the emission limits which are set by legislation. The end-product of composting is well stabilised organic matter – compost. It is used as a fertiliser and soil improver, because it enriches soils with nitrogen, phosphorus, organic carbon, and microorganisms.

Several composting technologies are practised depending on available space, the volume of organic material, budget, climate etc:



- Windrow composting is the cheapest and simplest, where organic waste is placed in a large pile known as a windrow and periodically mixed to introduce oxygen and promote microbial activity.
- More sophisticated windrow systems rely on force aeration, and covering the pile against weather conditions.
- Another method is in-vessel composting, where the process is controlled by a composting chamber.

Enclosed systems are much more expensive than windrow systems, but they require less land because of the faster processing time and better control over odours. It is important to consider:

- Quality, types and availability of input materials (the biowaste). The quality of input is never sufficient, thus, some kind of pre-treatment is required to reduce impurities, homogenise the mass, and adjust C/N ratio.
- Siting and sizing of a composting facility.
- Technical issues, stormwater and odour management, climate considerations, birds and vermin.
- Benefits from composting for waste producers, and fee-system.
- Market for compost and product certification.

Anaerobic digestion (AD) is a biological process of converting organic waste into two usable products – biogas and nutrient-rich residue, digestate. Anaerobic digestion by microorganisms takes place in large enclosed vessels – digesters. These are very expensive; because they work in an aggressive environment, they have to be airtight at all times, and they contain explosive biogas.



Digestion is widely used in stabilising manure and sewage sludge, and in this case it is wet digestion – the masses are pumpable and the process is continuous. In the case of treating silage, green waste or solid biowaste, the mass is not pumpable. The cycle is not continuous, since the waste has to be transported into digesters by front-end loaders.

Usually, the process requires two to three weeks. The reactor must be heated up to 38°C to maintain mesophilic processes. Biogas produced by anaerobic digestion is a mixture of CH₄, CO₂, and small amounts of H₂ and H₂S.

The digestate may be used as liquid, or dewatered and sometimes even post-composted. Digestate can be used for agricultural purposes and the methane-rich biogas can be used to generate electricity and heat, or be compressed into transport fuel.



When to use composting, when anaerobic digestion?

Small scale composting can be easily applied everywhere, by anyone, and it can be practised anywhere. It is a perfect opportunity to start with treating organic waste. Windrow composting of garden waste in open air is common for beginners. To become economical, the scale of composting has to grow beyond 10,000 t/year throughput. Large scale composting requires equipment and space. Air treatment is a must in case of reactor composting.

Anaerobic digestion requires special heated reactors and relatively high and a steady flow of waste. The revenues depend on the gate fee² of input material, price of biomethane, and ease of utilising digestate. It requires skilled personnel and strict safety measures, because methane is an explosive gas. To become economical, the scale of AD has to grow beyond 20,000 t/y throughput. Both liquid and solid state AD are widely used. Household-scale AD reactors are generally not feasible. Along with AD treatment, the mass of waste does not change significantly. It means that the treatment residues, the digestate, have to be further treated. Quite often it is dewatered and post-composted. After that it can be used as traditional compost.

Advantages of biotreatment:

- Separate collection and treatment of organic waste reduces GhG emissions from landfills.
- If organic waste is separated from the waste stream, then the remaining material (e.g. packages) are cleaner, making material recovery easier.
- The end products of biotreatment (compost or digestate) are fertilisers, and also are improving the quality of soil.



² Gate fee is the fee paid at the reception to any waste treatment plant. It does not include transportation cost, but it does include the cost for processing of waste and taxes.

- AD produces biogas, which is an alternative to fossil fuels and is easily marketed.
- Compost reduces demand for mineral fertilisers.
- Locally organised biotreatment creates jobs.

Disadvantages of biotreatment:

- Treatment of organic waste is costly.
- It requires equipment.
- It requires odour and leachate purification.
- There can be some difficulties in marketing compost/digestate.
- Regardless of the quality, the compost or digestate is still considered waste, and has to be marketed under waste regulations.
- Process, if in open air, is weather-dependent.
- AD requires highly skilled personnel, because the process is sensitive, and the biogas is explosive. Gas requires additional cleaning.

MECHANICAL-BIOLOGICAL TREATMENT

As the name suggests, **Mechanical-Biological Treatment (MBT)** contains elements of mechanical treatment of waste, and then biological stabilisation of the finest part of it, which is rich in organics.



An MBT plant is a type of waste processing facility that combines a mechanical sorting facility with a form of biological treatment such as composting or anaerobic digestion. MBT plants are designed to **process unsorted mixed household waste**. MBT systems enable the recovery of materials contained within the mixed waste. This component is either configured to recover the individual elements of the waste or produce a refuse-derived fuel that can be used for the generation of power. The main idea of MBT treatment is to degrade organic material in a well controlled environment to avoid greenhouse gas (GhG) emissions. Compared to similar degradation processes which take place in landfill, emissions are better controlled. After the organic fraction is composted or anaerobically digested, it should be disposed of to landfill, but not in soil. The concept of MBT was developed in the late 1980s to offer an alternative to waste incineration of unsorted wastes.

Why is MBT used?

MBT was developed to treat unsorted waste. It required no change in collection, therefore it was attempted by less responsible municipalities.

Advantages:

- Robust technology, well automated.
- Organics degrade – less GhG emissions.
- Anaerobic degradation is possible too – CH_4 can be captured and used for energy.



- Plastic-rich fraction can be converted to refuse-derived fuel (RDF), so the mixed plastic fraction that is unsuitable for recycling, is still used for energy in incinerators, cement kilns, or other industrial burners.
- The finest soil-like fraction is stabilised and it emits almost no GhG, so it can be landfilled under current regulations and without a need for landfill gas collection.
- MBT aims to minimise the need for landfilling and incineration.
- Available on a very large scale.
- Technology may be later upgraded to handle sorted organic waste – once source separation replaces mixed waste collection.

Disadvantages:

- The absence of source separation can discourage public participation, incorrectly signalling that do-nothing is acceptable.
- In the case of MBT (as in the case of having an incinerator or a landfill) the policy makers feel no push to change waste disposal into recycling.
- Plastic-rich fraction that is converted to refuse-derived fuel (RDF) is lost for recycling, and burning RDF still poses significant risks to human health.
- MBT and RDF compete with recycling.
- Large investments.
- Equipment is not long-lasting.
- No straightforward end-use for fine fraction other than landfilling.
- Soil-like fine fraction is not equal to quality compost and cannot be used in agriculture.
- MBT cannot be considered as recovery of waste from 2027 in the EU.

Material recovery, biological treatment (MRBT) is an advanced modification of MBT, where focus is not just processing plastics and other combustibles to waste fuels, but separating waste stream to individual waste materials like plastic, paper, glass, wood etc. The remaining organic-rich part is still subject for biological treatment. For more information check Zero Waste Europe's [policy briefing on MRBT](#) .



WASTE-TO-ENERGY

Wastes have been burned throughout the history of humankind. The incineration technology has developed dramatically since then. Even though there is no room for waste-to-energy in the zero waste hierarchy, it is currently still a reality in many places in Europe and elsewhere and when addressing this reality, we need to know what it is.

The most common technology is mass-burn. No pre-treatment is required and large volumes are incinerated "as received". Alternative to mass burning is incineration in rotary kiln and fluidized bed systems. One of the most important parameters is temperature: minimum for municipal waste is 850°C and for hazardous waste is 1100°C. The flue gas (gas from burning of waste) contains a wide range of

particulate and gaseous contaminants and must be cleaned before being released to the atmosphere. This is the most expensive part of waste incineration.

Incineration is not waste-free, because **ash is generated**. Typically ash makes up 25% of input waste mass. There is bottom ash and fly ash:

- **Bottom ash** represents approximately 90% of total ash content. It consists of non-combustible materials, such as sand, stones, glass, porcelain, metals, and traces of unburnt organics. Bottom ash makes 150 to 300 kg per one ton of waste incinerated.
- The amount of **fly ash** is 10% of total ash content. Fly ash is considered hazardous, and cannot be landfilled in municipal landfills.

Advantages:

- The process results in a significant reduction of the mass (up to 75-80%) and volume (up to 90%) of the waste, reducing the need for landfilling.
- Waste is sanitised and stabilised in minutes.
- Organic content of wastes reduces to minimum.
- Energy (heat and electric power) production is of priority.
- Waste incineration also contributes to savings in fossil fuel consumption, whereas residual waste from recycling can be incinerated.



Waste incineration is always a large-scale technology.

Disadvantages:

- Incineration seriously affects separate waste collection and other waste management technologies.
- Materials are lost for recycling, and organic carbon cannot be utilised in soils.
- Ash cannot be used for any meaningful purpose.
- Incineration is a major risk to public health, as toxic emissions and fly ash can travel long distances in the atmosphere and deposit in soil and water, eventually entering human bodies.
- An incinerator is costly to build and maintain and once it exists, it has to work: it's not possible to switch on and off whenever we want.
- It is not replacing landfills (the result of the incineration goes to landfill in any case).



The combustible fractions of waste are food and green waste, paper, cardboard, plastics, rubber, wood – all well-recyclable materials. This is why incineration should not be an option unless other recycling methods have been exploited.

WASTE FUELS

Refuse-derived fuel (RDF) is a fuel produced by shredding and drying municipal solid waste, commercial and industrial waste.



RDF consists largely of combustible components of municipal waste such as plastics, wood, rubber, textile, but also some biodegradable waste. Inert mineral fraction (like construction & demolition waste) is removed; as well as most parts of wet organic fraction. Reject waste is disposed of in landfills, or further processed.

Advantages of RDF compared to incineration of unprocessed fuel:

- It is homogenous, its calorific value is high, moisture and ash content are low.
- It is possible to prepare waste fuels 'on demand' according to market requirements.
- Waste fuels can be produced everywhere, also in small quantities; it is storable and easy to transport, and it is also exportable.
- Standards for solid recovered fuels exist, significantly broadening its marketing possibilities.



Disadvantages of RDF:

- Its production is costly.
- Material is lost for recycling.
- Burning RDF in incinerators, cement kilns, or other industrial burners, poses significant risks to human health.
- Rejected fine fraction still requires disposal or further treatment.
- Any fuel which is made of waste is considered as waste, and rules for waste incineration apply – flue gases are still harmful to the environment.
- Storage requires great care, as organic-rich material is a subject for self-ignition.



Ferrous metals, aluminium and some individual plastic fractions may be removed for material recycling. Sometimes optional bio-drying is applied to benefit from drying organic fraction, which should otherwise have been disposed of. **Biodrying** is a technology using heat produced in the initial stage of biological degradation of organic waste for augmenting its drying rate, whereas moist air is removed by ventilators. Excavated landfill plastic rarely requires bio-drying as organic fraction has already been degraded. The number and the kind of processing steps correlate to the waste composition and the desired product quality.

Another type of RDF is **SRF – Solid recovered fuel**. SRF is distinguished from RDF as it is produced to meet a standard – the classification and specification requirements laid down in EN15359 (Standard from the European Standardisation Committee), CEN/343.



RDF is primarily utilised for energy production in incineration and co-incineration plants. SRF is typically used in the cement industry.

Production of RDF or SRF is feasible at any scale, if a market for such fuel exists. Without a market, it does not make sense.

For more information about RDF check GAIA's report "[Understanding Refuse Derived Fuel](#)".



PLASTIC TO OIL AND GAS

Pyrolysis is thermochemical decomposition of organic material at high temperatures in the complete absence of air (or oxygen). Pyrolysis leads to synthetic liquid fuel similar to crude oil and by-products as solid carbon and combustible synthetic gases. Liquid products can be mixed with natural crude oil and further refined to gasoline and other petroleum products.



Gasification occurs in the presence of limited amounts of air that allows partial combustion of the material. Gasification leads to flammable synthesis gas, which is a mixture consisting primarily of hydrogen, carbon monoxide, and some carbon dioxide.

Syngas is a valuable commercial product, which can be used as an intermediate to create synthetic natural gas, methane, methanol, dimethyl ether and other chemicals. It can also be used directly to produce energy as a substitute to natural gas.

Synthetic oil and gas can be used as raw material for producing new plastics. Then it is called chemical recycling of plastics.

Advantages of pyrolysis:

- Energy can be obtained in a cleaner way than from conventional MSW incineration plants because of lower amounts of nitrogen oxides (NO_x) and sulphur oxides (SO_2) in flue gases.
- Most of pyrolysis' products – solid, liquid and gaseous – are energy-rich.
- The scale of pyrolysis' plant is more flexible than in case of mass-burn of wastes. Smaller volume is associated with smaller gas cleaning devices, which reduces investment and operation costs.
- Compared to solid waste or RDF, pyrolysis oil has high calorific value, it is well storable, easy to transport, and the potential market is worldwide.
- Oil can be further processed to other products too.



Disadvantages of pyrolysis:

- Its complexity and high energy demand.
- Equipment is sophisticated, costly.
- The result depends on the quality of waste. Municipal waste, however, is heterogeneous in composition and size.
- The byproducts of pyrolysis contain concentrated toxins, which can potentially leach into the environment and harm public health.
- When burned, the produced oil and gas can emit ultrafine particles of toxic metals. Implementing air pollution control for the different uses is challenging.



Pyrolysis and gasification lead to **chemical recycling**. Chemical recycling is the process of converting a polymeric fraction of waste by changing its chemical structure back into substances that can be used as raw materials for the manufacturing of plastics. It is seemingly the best way of recycling plastics into monomers, and then back to polymers, similar to virgin plastics. The technology, however, is still not proven;³ it requires large amounts of plastic waste to be economical, and it produces toxic by-products.

³ Read more from: Zero Waste Europe (2024). "[Fifty years: chemical recycling's fading promise](#)"

MUNICIPAL LANDFILL AS AN ENVIRONMENTAL PROBLEM

Landfilling has many negative environmental effects during its active operational phase and even after it has been closed. One should reduce disposal as much as possible, but we cannot totally avoid landfilling in the future. Ultimate recycling of waste is not possible due to economic, technical, environmental and health reasons. Therefore, we should improve the environmental performance of landfills and build sanitary landfills. Sanitary landfills are those where waste is isolated from the environment until it is safe.⁴ Sanitary landfills will remain a sink for wastes and compounds that we do not want to keep in cycle (e.g. asbestos).

Additional reading about the environmental effects of landfills and basics of safe landfills:

“Landfill basics” chapter from [The Keep It Clean Plan](#)  by Zero Waste Estonia (formerly Let's Do It Foundation).



LAST BUT NOT LEAST – RECYCLING

Recycling of waste is defined in the EU's [Waste Framework Directive](#)  as “any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes.”



This includes the reprocessing (composting) of organics but importantly does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations. Often recycling is split into two categories:

1. Material recycling for materials such as paper, metals, plastics etc.
2. Recycling of organics via composting and digestion.

What happens to different recyclables after they are collected?

- Glass, collected as mixed or by colours, is transported to glass separation facilities where it is post-separated by sensors according to colour and qualities. Uniform glass cullet is marketed in the glass industry by colour.
- Paper is manually sorted into different grades, e.g. office paper, brown corrugated cardboard, white corrugated cardboard, newspaper. Paper and board is baled and transported to paper factories.
- Mixed plastic packages are separated manually or by sensors into individual materials. Plastic is separated according to polymer (PET, PE, PS) and sometimes also according to colour. Transparent and white has better value than coloured plastic, whereas the worst is black. Sometimes plastics are shredded, or even pelletised. Such pellets are feedstock for the plastic industry.

⁴ [Landfill Directive 1999/31/EC](#)  (amended by the [Directive 2018/850/EC](#) ) and the [Council Decision 2003/33/EC](#)  on acceptance criteria (WAC) set standards for the authorisation, design, operation, closure and aftercare of landfills.

- Ferrous metals are separated by electromagnets. Eddy current separators (ECSs) are useful for the separation of non-ferrous metals like aluminium and copper.

This step is preparing materials for recycling. Recycling itself takes place elsewhere (in the same country or abroad, depending on the market situation for each material), not in the waste collection facility.

The issue of recycling and the role it plays within local zero waste programmes is **much debated** and one that we must tread carefully as zero waste practitioners. Therefore, we have decided not to go into detail on the recycling process itself here, but rather focus on the different aspects of this debate. This is also because the necessary space and literature it would take to describe the recycling process of each material is far too long. However, we have included some links at the end of this chapter which can be useful to get to know the recycling processes for the key materials found within municipal solid waste.

At its core, true recycling is the foundation of a circular economy, which is why we advocate for effective separate collection systems so much. Effective separate collection, often done via the door-to-door system, is the best method for achieving high recycling rates, given that they capture greater quantities of recyclables at higher quality, therefore being easier to recycle.

With an increasing number of targets set by governments for the percentage of recycled content in products, and commitments by businesses to include a set percentage of recycled content in their own materials, it is clear that there needs to be a substantial flow of recycled materials within the European market today.

So as zero waste practitioners, we must advocate for separate collection systems at the local level as this is the greatest way to improve recycling and reduce mixed waste amounts. This is most commonly our entry point into discussions on zero waste.

Of course, though, recycling alone is not enough. Our work on increasing recycling must always be supported by advocacy on policies that prioritise the prevention of waste – tackling consumption and production patterns so that we reuse more materials in a circular manner.

Yet on the topic of recycling itself, what is clear today is that the **recycling system in Europe is not working**. Recycling rates across municipal waste streams are stagnating,⁵ because primarily there is a larger growth in the volume of material (products) put on the market and consumed rather than recycled, especially in the case of electronics.⁶ For some waste streams, collection infrastructure and incentives remain insufficient – meaning collection is not sufficient to meet recycling targets, for example with food waste [Zero Waste Europe estimated](#) ⁷ in 2024 that only 26% of food waste was being separately collected in the EU.

The EU also has targets for recycled content with products, especially plastics (read more about that in the *Waste Policy and Advocacy* chapter), with the goal to incentivise greater recycling and less virgin material use. However, since 2023-2024⁷ onwards, these recycled content targets have actually seen brands/manufacturers use imported recycled content from parts of the world where this is cheaper than

⁵ European Environmental Agency (2025). [Waste recycling in Europe](#) ⁷.

⁶ [An Overview of WEEE within the EU framework](#) ⁷ (2025)

⁷ Plastics Recyclers Europe (2025). [Wave of surging plastic recycling plant closures hits Europe](#) ⁷.

in Europe. Consequently, significant recycling capacity in Europe was shut down in 2024–2025, with not enough demand or financial incentive there to make recycling a viable economic option. Due to the continued high production of oil, virgin plastic remains far cheaper to use for brands than recycled plastics today, reducing demand for recycling further.

The EU is slowly waking up to this issue and is beginning to discuss (during the writing of this chapter, in 2026) initiatives such as the "Made in Europe" one to support European recycling more, which would include measures such as mandating procurement contracts prioritise or set aside a certain share for European made/recycled products.

So it is clear that currently the recycling system is not working for citizens, for municipalities, for recycling companies, for national governments, and – most importantly – it's not addressing the environmental problems we need to so urgently fix. This is particularly evident and important when discussing plastic recycling. In theory, all different types of plastics can be used again. The reality is vastly different though, with estimates suggesting that only **9%**⁸ of all plastic ever generated worldwide has been recycled.



Before reading on, think: Why do so few plastics get recycled?

There are several reasons for that.

1. True recycling is not often what happens. Materials collected for recycling, especially plastics, often have the potential for one or two more lives before the polymer deteriorates and they end up as waste. For example, plastic bottles being recycled into socks or garden furniture – this is **downcycling**, meaning the quality of the end material is worse than that of new material and further recycling eventually becomes impossible. In most scenarios, they still also require a certain amount of virgin material – the material being used for the first time since its extraction and manufacturing – as well as an intensive amount of energy to be remade. Worse, there is an increasing trend to burn plastics for fuel and call this “chemical recycling” by mistake or intentionally (disinformation). When in fact this is just embedding an unsustainable treatment method within the system.
2. There is also a particular concern for recycled materials which come into contact with the foods we consume, such as plastic packaging. If recycled content is put into plastic packaging for what is called “**food contact materials**”, there is very little knowledge or regulation on where this recycled content came from and therefore the potential hazardous chemicals which may exist in this recycled material – which we then subsequently put into our bodies. The regulation (EU) 2022/1616 describes how recycled plastic materials which are intended to come into contact with foods should be handled. Ideally all products and packaging, including those in contact with food, are durable, reusable, toxic free and recyclable at the end of life, allowing to achieve a toxic-free circular economy. PET recycling is an example from processing polymers into new packages that are intended for food contact.
3. European municipalities still use **different calculation methods for recycling**, even within one country, so the data gathered on recycling cannot be accurately compared from one

⁸ Houssini, K., Li, J. & Tan, Q. (2025). [Complexities of the global plastics supply chain revealed in a trade-linked material flow analysis](#) , *Commun Earth Environ* 6, 257

country to another. Some include the discards from recycling as they were at least collected for recycling, even if they didn't end up being recycled, whilst other reporting methodologies include fuel made from burning waste. As mentioned in the *Waste Policy and Advocacy* chapter, the EU has introduced legislation (2020) to enforce a harmonised calculation methodology across member states to help overcome this issue, although as of 2026 we haven't seen the results of this bearing fruit yet.

4. European countries still **export vast quantities of our waste to non-European countries**. This is often classified as recyclable materials (sent for recycling) but the reality is that it is dirty and unusable materials that European recycling companies and waste handlers do not want (received for recycling but never recycled). Many of the countries who receive this waste, whether legally or too often illegally, have poor waste management infrastructure themselves and therefore are not able to treat the waste properly. This results in tonnes of plastic and other dirty types of waste being burnt, landfilled or dumped – damaging local communities and biodiversity in regions far away from Europe where the waste was initially generated.
5. Finally, there remains an issue with the **definition of recyclability** – or the lack of one. For example, if a product claims it is 100% recyclable, that does not mean it will necessarily be 100% recycled in the area where that product has been consumed. Due to a lack of a harmonised definition of *recyclability*, recyclability claims are not necessarily based on real-life conditions such as the availability of recycling infrastructure, market conditions and the financial viability of recycling operations. While waste prevention and reuse efforts must be prioritised, we cannot achieve a circular economy, as outlined in the Circular Economy Action Plan, without closing this huge gap between recyclability potential, actual collection and sorting, and final recycling. This requires European-level action to establish a clear harmonised definition of recyclability, to strengthen the enforcement of existing requirements in key EU legislation, such as the [Packaging and Packaging Waste Regulation](#) ^[7], revised, which would help ensure that ambitious sector or product level standards for recyclability are established.



FINAL REMARKS

Consider the following points:

- Most waste treatment facilities can be large or small, except **incineration and landfills**. These **ones are large, they cost a lot to build and run**, and they need large amounts of waste to justify investments. Therefore the mere existence of these influences decision-making in waste planning.
- Building an incineration plant with EU subsidies is **not possible any more**. Incineration is only in play if it already exists. Pay attention that its owner is often an energy company that has no waste management concerns. Any waste treatment facility has a lifespan. They get exhausted and require maintenance. Until landfill and incinerators operate well it is difficult to justify abandoning them. Once a landfill fills up or an incinerator breaks down it opens a window of opportunity for phasing them out.
- **It is unrealistic to wish for chemical recycling**. It only works if there is a plastics industry to consume recycled oil. It may be technically too complex and the temptation to simply burn the plastic-derived oil is great. Do not forget that there are residual waste streams from chemical recycling.
- **Anaerobic digestion** requires a stable waste stream. The primary motivation of AD is biogas. Therefore, it belongs to an energy company, rather than a waste company. The storage and application of digestate must always be resolved all year round.
- **Composting** is affordable for every local government and every waste company. Open windrow composting is the best to start with. The biggest concern is management, so that it pays off. Home composting is often seen as an attractive alternative, as it eliminates the need for separate collection. However, residents may not be willing to deal with it day after day, and if done poorly, it can become a source of GHG. It is best to have both, backyard composting in terms of waste reduction and education, and biowaste collection that accepts any amount at any time.
- When making decisions about the most suitable waste treatment technologies it is important to take into account the **health impacts** that it may have. Especially the effects on the local communities and workers who breathe contaminated air, drink contaminated water and eat food that was grown in the environment that could be potentially polluted with toxic substances. Those negative impacts can be prevented by concentrating efforts on waste prevention and reuse and stricter legislation and control of the use of chemicals.

By knowing the pros and cons of every waste treatment method, you as the zero waste practitioner can easily discuss the possible transformation of a municipality to a zero waste one. You just have to avoid a costly and outdated mindset. Recycling is a debatable issue but it remains a core part of the circular economy and is often the best entry point to focus on in initial discussions with municipalities. The limitations and failures of our current recycling system must be known and recognised within our work. As a result, **focus more attention on the upper end of the waste hierarchy**, and minimise landfilling and energy use. You cannot just reject – you have to **replace** these methods by offering viable solutions.



Additional reading and links on waste treatment and recycling:

- [Decision Maker's Guides for Solid Waste Management Technologies](#)
- [European Biogas Association](#)
- [European Composting Network](#) , in particular its [factsheets](#)
- [The European Recycling Industries' Confederation \(EURIC\) factsheets](#)
- [European Environment Agency's advocacy work on recycling](#)
- [Plastics recycling](#)
- [Paper/cardboard recycling](#)
- [Glass recycling](#)
- [Global Alliance for Incinerator Alternatives](#) , in particular [Facts about "Waste-to-Energy" Incinerators](#)

Closing questions for the reader to reflect upon:

- Which parts in this chapter were most confusing or difficult for you to understand? What do you think made them challenging?
- What would be the most important arguments for you when suggesting/selecting a waste treatment method?
- What waste treatment methods would you recommend to your municipality? Why?
- What are the main challenges around recycling in your municipality/region/country?
- What do you want to take with you from this chapter?
- What do you want to know more about?

WASTE POLICY AND ADVOCACY

Authors: Kadi Kenk and Jack McQuibban

Opening questions for the reader before reading:

- What do you want to know most about waste policy and advocacy?
- How do waste policies affect our everyday lives?
- What waste policies/legislation regulates waste management in your municipality?
- What waste policies/legislation regulates waste management in your country?
- What are the relevant European waste policies and legislation?
- What is the process of national and local level policy-making in your country?
- What would need to change so that the sustainable choice (e.g. buying in bulk) would be the easy one?

This chapter is made up of four parts:

- **Why policy matters** is an introduction to how policies quietly shape our daily choices.
- **How power works** shines light on zero waste advocacy work.
- **What to influence** brings practical examples from the everyday life of a zero waste advocate.
- **Key EU waste policies** is a compact overview of the relevant policies and targets in the EU.

WHY POLICY MATTERS



Before reading on, reflect on your experiences: Where have you seen policy play an important role in how waste gets reduced, collected or managed?

A policy is a choice made by a government, organisation, or institution about how something should work in practice. When working on systemic issues related to zero waste, you are bound to either encounter **existing** policies, **missing** policies or **changing** policies. If you've ever paid a waste fee, used a bin, or bought packaged food – policy has already shaped your day.

Examples of policy impacts around you:

- Bins: their type, instructions on how to use them, and even their colour.
- Cafés accepting your reusable cup.
- The cost of waste collection.

Policies usually come from government institutions, ranging from the European to local level, but they also come from businesses – for example, their policy on how much recycled material they include in a certain product design or what kind of environmental claims they make about their products.

For the majority of this chapter, we will refer to policy as **public policy** – the actions and decisions taken by publicly elected officials and public institutions in the EU.



Knowledge about how public policy on waste and resources is created is invaluable for people and organisations working on waste management and prevention systems. **Policies set the framework** for action within which all other stakeholders must operate. Knowing how these policies get designed and then put into force, how these policies affect local waste management systems and how different levels of policy-making interact with one another will be beneficial for anyone working on systems change.

Individual choices matter – but policy decides how far they can go.

Exercise:

Imagine you were bothered by the waste generated by single-use cups and you wanted to urge more people to start using reusable takeaway cups.

What is your action plan? How many people are you aiming to reach?

Many new activists would try to convince their friends and acquaintances to bring their own mugs to cafes, and tell people about the pollution caused by single-use cups – but this type of action doesn't reach many people. While it is still important to raise awareness about the issue and support individual action, more effective long-term action would be to influence the regulatory system around takeaway drinks.

Policy turns good behaviour into normal behaviour.

To showcase this, let us use one example from Germany. As we will discuss later in this chapter, the EU legislation on reuse in 2025 was not as strong as it should have been.

Activists in Germany had been pushing hard for years to get legislation that would support reuse business models. In the early 2020s, important legislation was passed at the federal level in Germany, as a part of the country's transposition of the [EU Single-Use Plastics Directive](#) ^[7]. This made it a requirement for businesses over 80 m² and with more than 5 employees to offer reusable options for cutlery and food/beverage containers that would be consumed immediately. Many local groups started using this new federal law to support cities and local businesses in implementing it, as well as going a step further by removing the single-use option as well. This example shows how the different levers of policy-making interact with one another, and they must all be considered when advocating local zero waste strategies.

The EU has set an ambitious framework for waste and the circular economy in the last decade. However, the details of how waste is managed and who is responsible for the numerous policies associated with the circular economy differ greatly from country to country. Therefore, understanding the policy landscape is absolutely critical for anyone who wishes to suggest realistic but also ambitious policy changes.

Policy defines what is “normal”, “easy”, and “allowed”.

Policy signals what society values, and therefore makes some actions easier and others more difficult. Not long ago, it was normal for all waste to be dumped in nature without much regard for environmental consequences, and curbside separate collection was hardly implemented anywhere. Requirements for sanitised landfills and the normalisation of separate collection have only become possible thanks to rules and systems that have made it so. The same way reuse and other waste prevention methods will only become normal if policy supports them.

While policy reflects societal norms, making something into a policy is also a decision to move **responsibility from individuals to systems**. An advocate is a person who uses policy change to establish a new normal. It is not sustainable to place responsibility on individuals alone, because their choices are limited by the systems around them. Policy change is needed to reshape those systems and enable better outcomes at scale.

Without policy → it is possible to lay the blame on consumers.

With policy → we can shift accountability to producers, designers, decision-makers.



Before reading on, think: Which waste policies can you name, and which levels of waste hierarchy do they govern?

Policy becomes especially important for reuse, prevention and management of products that should be governed by **Extended Producer Responsibility (EPR)** laws.

EPR schemes  are a policy instrument available to governments. They apply the 'polluter pays principle' by placing the responsibility of a product's entire life cycle – from designing environmentally friendly and low-impact products to managing their end-of-life – onto the producers themselves. Their design and implementation (and subsequent performance) differ greatly from country to country within Europe, but the general principle remains the same – the producers of materials which are placed onto the market should be responsible (financially) for ensuring they are properly managed.

Without policy, only motivated people act. A level playing field provides protection for businesses, cities, and citizens who want to do the right thing. While sustainable practices help save costs in the long run, they are an investment which would put any business in a disadvantaged position unless everyone was equally required to play by the same rules. Most circular economy policies in Europe concern waste management. This is due to the hazardous nature of waste and the historical and problematic practice of unsanitized landfills. However, times have changed and so should policies.

Policy is not abstract – it's made by people.

Because policies are made by people, there is a power in human connection and comprehension of zero waste topics. Elected officials, public pressure, and changes over time make policy both open for improvement and vulnerable to influence by stakeholders who prefer the *status quo*. This is why this chapter tackles the complex topics of policy and advocacy, together.

Advocacy is the act of speaking up, organising, and taking action to change decisions, rules, or practices that affect people's lives. 

If we want less waste, we must change the rules that allow waste to exist. Without policy, zero waste stays a niche. With policy, it becomes the default.

HOW POWER WORKS



Before reading on, think: Who do you believe has the power over policy-making?

Most people think politicians hold all the power. But power is the ability to shape decisions, outcomes, and what feels possible – and everyone can do that. As an advocate, you are either embracing what you can influence or holding other stakeholders accountable. Sometimes you have to be the one to start the ball rolling to establish new norms, other times the laws are there, but not enforced. Power can be different:

- **Formal power** – laws, permits, budgets.
- **Administrative power** – interpretation, implementation, enforcement.
- **Economic power** – markets, pricing, product design.
- **Narrative power** – stories, norms, “common sense”.¹
- **Social power** – networks, trust, legitimacy.



Who in society has power – and how much?

Environmental advocates usually hold narrative and social power, but don’t realise it. There are a wide range of activities that all can influence public policy:

- Conducting research.
- Educating the public through awareness campaigns.
- Meeting with politicians.
- Organising social media campaigns.
- ...

Power can be invisible and can make an individual feel excluded. But this should not be taken personally, but understood that it comes from how systems around us are built. For example, decisions are often made before public consultations, technical language can hide true intentions, and fragmenting responsibility makes it feel like no one is responsible.

Example 1.

A municipality needs to decide between waste incineration or a new waste treatment plant. People expect that the consultation is where the decision will be made.

What often happens is that the main direction is already chosen **before** the consultation starts.

Why do you think that happens? What do you believe you can influence?

Why does this happen?

1. A problem is identified internally

→ “We need to deal with rising waste volumes.”

¹ Read more about narrative power from *Communication and Storytelling* chapter.

2. Officials and consultants explore solutions

→ incineration, landfill expansion, mechanical sorting.

3. A preferred option is selected internally

→ based on cost, contracts, timelines.

4. Public consultation is launched

→ but only on how to implement the chosen option.

So the real question “Should we build this at all?” is replaced by “Where should it be built?”.

✓ What you can influence:

- Framing early in the process (before formal consultation).
- Which options are considered at the start.
- Whether reuse and prevention are included as real alternatives.
- The criteria used to compare options (cost, waste prevention, climate impact).

✗ What you cannot change locally:

- National infrastructure contracts already signed.
- EU-level targets already agreed.
- Projects that are legally approved and funded.

✓ Who to talk to:

- City officers before plans go public.
- Technical staff drafting feasibility studies.
- Environmental departments.
- Planning and procurement units.
- Consultants writing strategy documents.

Example 2.

A target worded in technical language says: **“Packaging producers should reduce the plastic packaging placed on the market by 25%”**. This sounds like a promise to reduce waste, but:

- it does not tackle single-use or establish a new norm for reuse market;
- it drives producers to invest in lighter and less recyclable packaging because packaging on the market is measured by mass not pieces;
- it discourages non-experts from asking questions.

When neutral language is used, it often hides a political choice. That being said, basic questions should still be asked, even if the language sounds positive.

How would you see your role in a situation like this?**Who would you engage as allies to tackle the problem?**

Below are some points to consider.

✔ What you can influence:

- Translation of technical language into plain language.
- Public understanding of what is really being decided.
- Media framing of waste issues.
- Narrative around “inevitable” solutions.

✗ What you cannot change locally:

- EU legal wording.
- National legal definitions.
- Mandatory reporting terminology.

✔ Who to talk to:

- Communications officers.
- Press and local journalists.
- City councillors (who often rely on summaries).
- NGOs and allies who can help amplify plain-language explanations but also uncover well hidden false solutions in the technical texts. Zero Waste networks are often a platform for such conversations.

Exercise 1 (Part 1)

The way political institutions are set up can make it difficult to find out who is responsible for what – leaving people with the feeling that no one is accountable. When everyone is *partly* responsible, **no one is fully accountable**. Such confusion usually benefits those that should be legally responsible, enabling them to avoid implementing laws that they should implement.

This is an example of the issue of fragmented responsibility with regards to Extended Producer Responsibility (EPR). **List the following:**

1. Who are the stakeholders in the life-cycle of a single-use cup (in this case, packaging sold by a café)?
2. What is their responsibility in the life-cycle of a single-use cup?
3. Who would you hold responsible, if the cup was found thrown on the ground in a park?
4. Who would you hold responsible, if the cup ends up in a landfill instead of a recycling plant?
5. Who would you hold responsible, if the EU required there to be less single-use cups on the market?
6. Who would you hold responsible for holding the above mentioned parties responsible to ensure:
 - the cup is disposed of in a recycling bin.
 - the cup is recycled.
 - a Member State reports the reduction of single-use cups on the market?

These questions only brush the surface of how multi-layered the responsibility of just one item can become. The focus of an advocate should always remain on the power to change. **Fragmented responsibility** makes problems harder to fix because responsibilities are split across levels. This way they are easier to ignore, not the least because political risk is then minimal. This poses to anyone promoting zero waste the need to reframe the problem and make sure false narratives (blaming consumers) would have a balancing story. The current system allows blame to be shifted easily. This is illustrated in Part 2 of the exercise on page 85.

✓ What you can influence:

- Highlighting who has power at each step.
- Reframing problems as system failures, not individual behaviour.
- Proposing shared responsibility mechanisms (e.g. extended producer responsibility, reuse mandates).
- Building coalitions across sectors.

✗ What you cannot change locally:

- EU producer responsibility frameworks.
- National legal division of competencies.
- Corporate structures and ownership.

✓ Who to talk to:

- City departments beyond waste (procurement, health, events).
- National ministries responsible for the environment or economy.
- Producer responsibility organisations.
- Business associations.
- Civil society coalitions.

What is the difference between advocacy and lobbying?

Advocacy tactics and activities are the most important way one can help push for systemic change. Often, advocacy and **lobbying** are used interchangeably, yet

- lobbying is more associated with specific efforts to influence pieces of legislation,
- advocacy encompasses a much broader range of educational and awareness-raising activities.

The best advocacy campaigns and initiatives have a clear goal and a strong understanding of how to work within the system to their advantage. Therefore, planning and preparation is absolutely critical when conducting advocacy activities. There are several important steps to follow to plan your advocacy:

Understand

- You must understand your issue first. You need to define what success looks like, what the causes of the problem you're trying to solve are. You need to know who you require on your side to achieve success and who may oppose what you are trying to do.



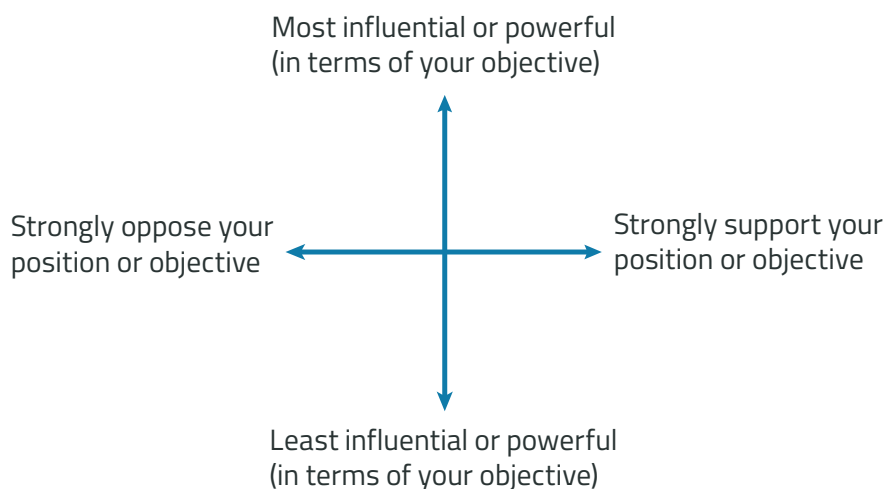
- [PEST](#) (political, economic, social and technological) and [SWOT](#) (strengths, weaknesses, opportunities and threats) analysis tools are very helpful at this stage, as well as problem trees to help you dig deeper into the root causes of the problem.

Plan

- You need to break down and identify different steps on the way to achieving your overarching goal. Identifying what needs to happen each year, month or week, for example, will really help paint the full picture of how you can achieve your success and what you need to do by when.
- You should also be able to identify the key targets and plan your key messages – what are you going to say to get people to act and who do you need to be saying these things to.
- Identifying key stakeholders by mapping them on the chart below where the two axes are their willingness to engage and power to change things, is a very useful tool to help during this process. Just identifying the key stakeholders is not enough though. On top of this, consider what power they have to bring about change and how willing they are to act in support of your goals. Then start to detail the specific activities that each stakeholder could take to help your mission.²



An example of the power mapping chart, which can be seen in more detail [here](#):



Act

- This involves implementing the planned actions you identified previously, evaluating your impact throughout the process, and being open to changing plans, tactics or messaging where needed, if it will help increase your impact.
- The “act” phase can involve several different “actions” – meeting with policy-makers, campaigning in public, capacity building for volunteers, collecting petition signatures, sharing digital content in a targeted way, engaging with the media etc. It’s anything that will help the people **who you want to act** to act **in the way you want them to**. This may be individuals sorting their waste better at home or a politician proposing new wording to a key piece of legislation.



² A good additional resource especially on power mapping: Burfield, E. (2018). *Regulatory Hacking: A Playbook for Startups*.

A more detailed guide on how to influence local policy can be found in the *Action Guide for Local Policy*.

Advocacy may seem daunting, or it may come naturally to you, but either way it is a fundamental and necessary part of your work if you have already made it so far reading this chapter. There are several different tools out there to help make your advocacy work as impactful as possible, continue learning and connecting with other people like you. Zero Waste Cities network provides a wonderful opportunity for it.

Furthermore, a large part of advocacy is the ability to communicate – either in written or oral format. Communication skills can be worked on and developed, but **being a confident communicator often comes from having prepared sufficiently**. Knowing your key messages, who your audience is, what their motivations are and what you clearly want them to do after reading/listening to your communications are all critical to effective advocacy. For more information about effective communication, check the *Communication and Storytelling* and *Engaging People and Awareness Raising Activities* chapters. There you will also find more information on how the power mapping chart can be further used.

To summarise, **understanding power doesn't mean controlling it**. It means knowing where to act, who to work with, and how change actually happens. For what it's worth, plans very rarely go as they were designed to. They can fail or exceed your expectations. Having a plan will help assess the outcome, good or bad, and will provide you with invaluable guidance on where to go next.

WHAT TO INFLUENCE

Ultimately, we should always be prioritising and advocating for policies that prevent resources from becoming waste. Recycling is not enough to get us out of the crisis we face today – more action is needed to embed reusable products, materials and systems into our everyday lives.



Before reading on, think: Why do you think there isn't more EU policy on reuse and prevention?

As discussed in the *Zero Waste Cities Model* and *Zero Waste Basics* chapters, municipalities commonly have the responsibility for the collection and disposal of municipal solid waste. Quite often, local authorities can also decide the structure of the waste fee that citizens pay, creating systems that discourage waste generation.

Yet as we move up the waste hierarchy to focus more on reuse, repair and redesign, the role of municipalities becomes slightly more opaque, as a range of other actors and legislative factors come into play. These actors include businesses such as restaurants, retailers, hotels, etc, whilst the legislative picture looks different for reuse and prevention. It requires broader action at the regional, national and European levels to have a significant impact outside of just a city's borders.

Examples of waste prevention initiatives relevant to local authorities:

- Deposit Return Schemes for several product categories (beverage containers to food packaging).
- Repair and reuse centres for bulky and electronic items.
- Packaging free shops.
- Washing and delivery of reusable nappies.
- Foodsharing platforms and apps.
- Marketplaces where second-hand items of all kinds can be sold, but textiles are most common.

Deposit Return Schemes and the limitations of city-wide prevention policies

Let us take a look at one key reuse policy – Deposit Return Schemes.

Deposit Return Schemes (DRS) place a small deposit on the price of a product or item, that is returned back to the consumer when they return the reusable product or item to another participating service provider or drop-off point. Most commonly the items are containers.



It is less common but not least relevant in circular systems, to also let users pay a deposit for using a specific product. DRS is a tool that can be used to incentivise the return of anything.

For example, you buy your favourite bottle of drink as part of your weekly shopping, and pay an additional 10 cent over the price of the drink. When you go back to the supermarket for your next weekly shopping, you either return the bottle to the cashier or drop it into a machine that identifies the bottle and collects it. Both options give you your 10 cent deposit back.

It's relatively simple and such policies are increasingly common in countries across Europe. However, DRS is being presented as

an example because such schemes also show the limitations that city-wide initiatives can have. To have a big impact and provide citizens with clarity on where the deposit return system applies, these systems should be applied either regionally or nationally.



Image from [We Choose Reuse campaign](#)

A national DRS is important as it should also set harmonised design criteria for reusable products. For the example of beer bottles, in a national DRS, the system should uphold certain design and manufacturing requirements that all beer manufacturers must follow. This allows the bottles to be easily cleaned and prepared for reuse, whilst also creating a level playing field for all those involved in the DRS system for beer bottles in this example – ranging from the producers of beers to the shops selling the bottles.

Whereas if the DRS is applied in one city but not its neighbour, manufacturers will not have the confidence they need to transition over to the system, whilst citizens cannot be sure where the deposit can and cannot be accepted.

One important note – this is not to say at all that DRS should not be tried and pursued by cities. In situations where national legislation does not mandate for DRS or other reusable pooling models, cities can play very important roles in piloting and implementing city-wide reuse initiatives.

Companies such as [Recup](#) , [reCIRCLE](#)  and many more have been expanding rapidly in Europe, as they work with cities to install pooling systems for reusable coffee cups and takeaway food containers. Companies such as [Eternity Systems](#)  in France have installed centralised cleaning infrastructure to help the expansion of reusable packaging by providing businesses with a safe and easy method for preparing products for their reuse.

When advocating for DRS within an EU member state, it's important to know that the Single-Use Plastics Directive set targets for the collection of plastic beverage bottles of 77% by 2025 and 90% by 2029. This target **cannot be achieved via standard separate collection models alone**, and therefore requires DRS, as these systems are proven to achieve such impressive results.

Once a DRS has been established within a city and is working well for items such as glass bottles or aluminium cans, we should use this to show municipalities that DRS could also work for other product types, such as e-commerce packaging, to truly help catalyse action towards a circular economy.

Of course, DRS is just one of several different policies that can help prevent waste. There is a broad range of policies available that differ depending on the target material/product for prevention. For example, repair cafes and reuse centres – where citizens can bring products or materials, ranging from bikes to furniture and electronics, that are repaired and prepared for resale – are commonplace in Zero Waste Cities. Increasingly, businesses are also using digital technology to scale up reuse systems, such as [eReuse](#)  in Catalonia which uses blockchain to create an open-source map of electronic products that have been repaired and reused in the region.

Additional reading on DRS:

- [DRS manifesto](#)  – a short briefing outlining how DRS should be established.
- [ReLoop's DRS factsheets](#)  – a set of very useful documents outlining the key factors and benefits of DRS.



What to ask of cities on reuse and prevention?



Before reading on, think: What would you ask, based on what you have read so far? Thinking of an activist who wants to reduce the use of single-use cups in the city, what kind of policies could they propose for the municipality (and the national government)?

Due to the increased number of actors needed to be involved in citywide prevention policies, some municipalities will be hesitant to take ambitious action or will not see it as a priority. In many cases, you may have a strong relationship with city officials working on waste management, but for the topic of reuse and repair, the relevant city official with such competencies in their job may sit in a different team or department.

Nonetheless, there are still many initiatives and actions that municipalities can take which can have a significant and quick impact on waste generation locally. [Zero Waste Europe's briefing](#)  on how municipalities can create effective reuse strategies outlines 4 main priority areas:

- **Establish reuse and prevention targets.**
- **Adopt environmental and social public procurement criteria that prioritise reuse.**
- **Invest in and create quality collection points.**
- **Create a reuse culture locally with the community.**



This section is by no means exhaustive. However, the purpose of it is to introduce some of the details that we most commonly face when advocating for reuse and prevention at the local level. You should focus on two main spheres when working with your local authorities to prevent waste:

- Where actions and results are in the municipality's **direct** sphere of control – e.g. making reusable items mandatory in all public events, spaces, buildings and embedding prevention criteria within public procurement tenders.
- Where actions and results are in the municipality's **indirect** sphere of control, so they play a supporting or convening role – e.g. incentives for bring-your-own packaging initiatives, social enterprises reusing more clothes or electronic items, HoReCa businesses offering free tap water, communicating about the need for households to drop-off used batteries – to name just a few!



EU waste policies and targets are the most ambitious in the world. However, at the local level we have seen significantly **better achievements thanks to strategic action taken with the help of progressive zero waste advocates such as you**. All of these examples have one thing in common: prioritising waste reduction and reuse. Current policies and targets often do not clearly mandate how to achieve this, for several reasons, e.g. the single market principle of the EU, the sovereignty of national governments, different sizes and needs of local governments. This makes pushing for real solutions both challenging and deeply rewarding. Collaboration and sharing best practices is crucial for this.

Exercise 1 (Part 2)

The stakeholder list in a life-cycle of a single-use package, the fragmentation of responsibility and the framing of “who’s to blame” from each individual perspective.

Fragmentation in case of single-use takeaway cups	When waste appears on the street
EU sets waste reduction targets ↓	National governments agreed to these goals! 
National government sets recycling rules ↓	National government blames local enforcement 
City manages collection 	The city blames national rules 
Producer designs the cup 	The producer blames demand    
Café sells the drink   	The café blames the customer 
Consumer throws the cup away 	Who would you blame? • the city for not having enough bins • the person acting disrespectfully • government who is not using your tax money to keep streets clean • ...

KEY EU WASTE POLICIES

The EU Commission develops strategies for five years at a time, during which it has priorities that shape its policies. For a period of 2019–2024 the [European Green Deal](#)  guided policies for a green and just economy, prioritising climate-neutrality by 2050, resource-efficiency and environmental sustainability across all sectors. One of its main building blocks was the second Circular Economy Action Plan that provided an agenda for directives and regulations that aimed to tackle issues ranging from greenwashing to the reuse of textiles, [eco-design](#) , reuse and the definition of recycling – all of which will have a huge impact on local zero waste strategies within the EU.

But due to increased cost pressures on industry and an urgency to stay competitive in the global market, a [Clean Industrial Deal](#)  emerged for the years 2024–2029. Its aim was to decarbonise European industry while keeping it competitive globally. While it did not reverse the objectives of the Green Deal, it emphasised maximising EU’s limited resources, reducing overdependencies on third-country suppliers for raw materials and essentially prioritising industrial competitiveness during the green transition.

This is important to know because it helps to understand how policies that used to be guided by environmental and health objectives **started to focus on material recycling**. For example, the new policies failed to address the negative impacts of waste incineration and focused on diverting waste from landfills. Recycled content became prioritised over shifting consumption and production practices and even health impacts to consumers. Waste prevention and reduction was being overlooked as a priority, contrary to what the waste hierarchy expects.

Under the Clean Industrial Deal, the Commission is supposed to adopt a Circular Economy Act in 2026 (which during the writing of this chapter hadn't happened yet). It is expected to facilitate the transition from waste to resource management, boost demand for secondary raw materials, and protect valuable materials. This may or may not be a good thing for a circular economy, since the focus appears to be more on recycling than on circularity and prevention. Under such frameworks, policy intentions are commonly exercised through directives and regulations.

A directive is a legislative act that sets out a goal that EU countries must achieve. However, it is up to the individual Member States to devise their own laws on how to reach these goals.



Regulation is also a binding legislative act. Unlike a directive, regulations are **directly applied** across the EU without the need for national legislative proceedings.

There are already numerous policies in place in the EU that have guided zero waste efforts. A key revision of the main EU legislation on waste was approved in May 2018 and it aimed at taking Europe towards a circular economy. These revised pieces of legislation include:

- [Directive on Waste](#)  (2008/98/EC) (also known as the Waste Framework Directive).
- Directive on Packaging and Packaging Waste 1994/62/EC) later replaced by [Packaging and Packaging Waste Regulation](#)  (EU/2025/40).
- [Directive on the Landfill of Waste](#)  (1999/31/EC).



Key elements of the revised Waste Framework Directive include:

- A common EU target for recycling 65% of municipal solid waste by 2035.
- A common EU target for recycling 70% of packaging waste by 2030.
- Recycling targets for specific packaging materials (see table below).
- A binding target to reduce landfill to a maximum of 10% of municipal solid waste by 2035 (see table on the next page).
- Separate collection obligation for [hazardous household waste](#)  and biowaste.



Overview of new required goals for EU Member States in the field of waste management

	2025	2030	2035
Minimum recycling & preparation for reuse of municipal Solid waste	55%	60%	65%
Maximum landfilling of municipal solid waste			10%
Minimum recycling of packaging waste	65%	70%	
Plastic	50%	55%	
Wood	25%	30%	
Ferrous metals	70%	80%	
Aluminium	50%	60%	
Glass	70%	75%	
Paper and cardboard	75%	85%	
Reduction of (i) food waste in processing and manufacturing and (ii) food waste per capita in retail, restaurants and in households		(i) 10% (ii) 30%	

- Requirement to set up a separate collection and an Extended Producer Responsibility (EPR) for textile.
- Minimum requirements for Extended Producer Responsibility (EPR) schemes to improve their governance and cost efficiency.
- Reinforcement of prevention objectives in particular, requiring member states to take specific measures to tackle food waste and marine litter as a contribution to achieve EU commitments to the UN's SDGs.
- 90% separate collection requirement for plastic and metal beverage packaging by 2029.

Always go back to the main text of the regulation to check your facts and find possible exemptions to any rule.

[The Packaging and Packaging Waste Regulation](#)  (PPWR) covers essential requirements all packaging must comply with related to its manufacturing, composition, and reusable or recoverable nature. Below are some important figures to pay attention to. But also as an advocate, know that the PPWR does allow Member States to set higher reuse targets to meet the prevention targets. International agreements are most commonly at the lower end of ambitions. For example cardboard boxes are excluded from the mandatory reuse targets. This leaves Member States and municipalities room to express their own objectives in their local policies.

	2030	2035	2040
Each Member State must reduce packaging waste	5%	10%	15%
Transport packaging within Europe will have to be reusable, this includes e-commerce	40%		70%
Packaging that needs to be recyclable in an economically viable way	100%		
Sales packaging of alcoholic and nonalcoholic beverages that have to be reusable	10%		25%
HORECA sector must endeavour to offer products for sale in a reusable packaging (non-binding)	10%		

2019 marked the adoption of a landmark piece of legislation, the [Single-Use Plastics Directive](#)  to stem the flow of plastics into our environment and oceans. It is a key component of the European Strategy for Plastics in a Circular Economy (2018), aimed to prevent and tackle plastic waste by, among other things, phasing out unnecessary single-use plastics, introducing economic incentives to reduce consumption and help the transition to reusable systems, and establishing high collection rates and Extended Producer Responsibility (EPR) schemes.

Certain waste-specific EU legislation requires or suggests EPR schemes to be set up. This is currently the case for Waste Electrical and Electronic Equipment (WEEE), End-of-Life Vehicles (ELVs), Batteries or Packaging and Packaging Waste Regulation (PPWR), Urban waste water treatment directive and the Textile Strategy. The schemes differ from state to state.

[WEEE Directive](#)  governs one of the fastest growing and most problematic waste streams within the EU today – currently it is increasing by around 20% each year. It covers a broad category of items – from mobile phones to fridges, solar panels to toothbrushes. The Directive requires the separate collection and proper treatment of WEEE and sets targets for their collection, recovery and recycling.

For advocates from non-EU countries, whether your municipality and national government has to follow these rules largely depends on the agreement between the country and the EU. Those willing to join the EU will sooner or later be bound by these directives, but, for as long as negotiations on environmental issues have not started, a country isn't formally compelled to follow the legislation, which is the case of most candidate countries. Countries like Switzerland are bound to EU directives to a certain extent, particularly with regards to [single market](#)  rules. In the case of the UK, Brexit separated UK and EU legislation and the UK had to create its own framework for waste and the circular economy.

The EU environmental policy is far from flawless but it is definitely ahead of any other economic region of the world. Thus, the above can be relevant as a success (and struggle) story to tell as much as inspiration to reach out to Zero Waste Europe policy team's members. They hold a wealth of information about how the EU policies have been developing.

NATIONAL LEVEL POLICY



Before reading on, think: How confident are you about who decides waste management related questions in your home region?

It's important to know the specific relationship between the local – regional – national levels of government within your country. For EU Member States, the targets listed above are applied and are the immediate responsibility of national governments to achieve. In most cases, waste policies are delegated from national to the local or regional level of government, where the responsibility for having the capacity, choosing the methods and finding the funding to achieve the EU goals listed above become a key issue in actually meeting these targets. You should not only know what the relevant EU policies are, but also what important circular economy related policies remain within the jurisdiction of national governments.

Possible differences between countries:

- Municipalities have full competency over waste management.
- Collection is a local authority competency, but fee charging may be a regional-level competency.
- Decisions over what can be collected, how much is charged for it and how the waste is treated sit fully at the national level.

Data and calculation methods

Each country, sometimes also specific subregions within the country, will have public bodies responsible for the collection of data on waste related indicators. Examples of national waste authorities and their data collection:

[England](#)

[Northern Ireland](#)

[Germany](#)

[Wales](#)

[Italy](#)

[Portugal](#)

[Scotland](#)

[Spain](#)

[Slovenia](#)



This of course is not an exhaustive list of statistical sites, but rather a list to showcase just a small sample of examples of governmental bodies responsible for collecting data on waste.

Key links on European waste data:

[Eurostat municipal waste data](#)

[Eurostat recycling data](#)

[Eurostat food waste and food waste prevention data](#)



! Pay attention – Eurostat data, whilst it is the most comprehensive overview of waste data across the EU and its close neighbours (hence why it is included in this handbook), cannot be seen as 100% verifiable or accurate. Improvements to data quality have been made 2020 onward, since when EU Member States began using a harmonised calculation methodology for recycling rates. This means an obligation to report what truly enters the recycling process rather than merely being collected. Further refined measurement rules and related methodologies (e.g., for recycled content and specific materials) were being adopted throughout 2025. Since reporting processes take time to adapt to the new rules, always check if the methodology behind the numbers is comparable.



Before reading on, think: Why would the harmonised calculation rules reduce some national recycling figures?
What does the *Waste Data Basics* chapter say about this?

Previously, Member States could include all the recyclable materials that were collected at a sorting facility and via collection methods in their reporting. Yet in most cases, a small percentage of these materials are too contaminated and too low quality to be considered for recycling. They end up being discarded and sent for landfill or incineration – meaning they make the statistics look better than the reality.

The latest EU recycling methodology now only counts what officially comes out of the recycling process. This methodology will likely present unified results in early/mid 2027. You can always advocate for **harmonised data collection** across the EU, in all Member States, which can be replicated by other European countries. This would include matching and adopting the new EU calculation methodology for recycling, as well as the key indicators used to measure waste, such as what is outlined in the [Zero Waste Cities Certification](#)  framework.

Additional reading and key links:



- [Learn in detail](#)  about EU decision making process
- [Track](#)  legislative processes in the EU
- [Unfolding the Single-Use Plastics Directive](#)  – a comprehensive briefing outlining what's in the SUP Directive, including specific goals and requirements of EU member states.
- [Packaging and Packaging Waste Regulation Implementation: A roadmap for national & local governments to slash record levels of packaging waste](#) 
- [Designing EPR to foster the EU's competitiveness and strategic autonomy](#) 
- [Reusable vs single-use packaging: a review of environmental impact](#)  – a comparison of reuse vs single-use packaging and their environmental impacts, which showcases the benefits of reusable packaging.
- [Factsheet: What's inside food-contact paper packaging? Plastic.](#) 
- [RREUSE's report on targets for reuse and preparing for reuse in the European Union](#) 
- [Putting second-hand first to create local jobs](#)  – a briefing outlining 4 main policies for municipalities to adopt to help create a local reuse culture.

- [Reducing food waste at the local level](#)  – a briefing outlining several steps that municipalities should adopt to prevent the volume of food waste they generate.
- [Blueprint for harmonising the implementation of takeaway food and drinks packaging systems for reuse in Europe](#)  – a strategic, practical guide for designing and scaling reuse systems.
- [Facilitating the adoption of takeaway reuse systems](#)  – a cost assessment of moving from single-use packaging to a takeaway reuse system and assessment of the necessary policy measures
- [The story of ReWine](#)  – a case study on establishing a reuse system for wine in Catalonia.
- [The story of Halle 2](#)  – a case study on Munich’s reuse and repair hub.
- [The story of Tübingen](#)  – a case study on the German city’s innovative single-use packaging tax

FREQUENTLY ASKED QUESTIONS

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

1. Where should I go to find out the relevant policies on waste and the circular economy for my community?
2. What are the best examples of policies that help zero waste?
3. Why shouldn’t we just ban all problematic materials?

1. Where should I go to find out the relevant policies on waste and the circular economy for my community?

This will differ depending on the region and country you live in. Eurostat provides the best overview of the European picture. Then for the national level, or even regional level within a country, you should research who is responsible for waste management and where they publish the data they collect. Each municipality you work with should know who they must report their waste data figures to.

2. What are the best examples of policies that help zero waste?

Any policy that follows the framework of a Zero Waste City is beneficial and should be encouraged by all zero waste advocates. These range from the introduction of separate collection systems to Pay-As-You-Throw systems and targets on the volume of material reused per year. Whilst some of these policies are designed and implemented at the local level, national and regional policies are key to help enable municipalities to take ambitious action. For example, national laws that mandate the separate collection of organics, [as was the case in Slovenia in the 2000s](#)  and now an EU wide obligation, the [French national law compelling supermarkets to donate leftover food waste](#)  or the Estonian requirement for allowing only reusables at public events.

3. Why shouldn't we just ban all problematic materials?

In theory, this would work and we could single-handedly prevent all of our most problematic materials from entering the market. In reality though, we must create a transitional strategy away from our current economic models. Businesses and citizens must be supported and guided to switch to reusable, safer materials during their everyday lives. Of course, we advocate for bans, but these bans must be accompanied by alternative solutions and an ambitious, yet realistic, timeline that allows all the relevant stakeholders to sufficiently adapt before the ban is enforced. Why bans need to be considered carefully from a psychological point of view, you can read from the *Learning Motivation* chapter in the Trainer Handbook.

Closing questions for the reader to reflect upon:

- Which parts in this chapter were most confusing or difficult for you to understand? What do you think made them challenging?
- Who are the main actors that you need to work with within your community on waste prevention policies?
- Why do you think policy-making feels scary or boring to some people? And why do some people find it fascinating?
- What skills do you already possess that makes you a good advocate? What do you feel you can improve on?
- What tools and methods do you have to help you with your advocacy?
- What do you want to take with you from this chapter?
- What do you want to know more about?

ACTION GUIDE FOR LOCAL POLICY

Author: Kristiina Kerge

This guide contains questions that can help you move from awareness-raising activities towards system-level influence by identifying where power, responsibility, and timing interact at the local level.

It supports strategic advocacy by clarifying who decides, who implements, and when intervention is most effective.

You can use this guide selectively, depending on your local context and advocacy goals. Before working through the list, clearly define your **advocacy goal**. This means thinking through:

- What is the change you want?
- Who should do what for it to happen?
- What can you influence?



If you need more support in defining this, read the chapter on *Waste Policy and Advocacy*.

1. Understand the political context.

Use these questions to map where political power sits in your municipality.

- ☐ Which political party or parties currently form the governing coalition in the municipality?
 - Which departments or committees do they control?
 - Do any of them actively support sustainability or zero waste topics?

-
- ☐ Which parties are in opposition, and do any of them actively support sustainability or zero waste topics?

-
- ☐ Where are decisions made: the city council, executive board, mayor's office, or administrative level?
-

2. Identify political commitments.

These questions help you understand what has already been promised — and by whom.

☐ In which parties' programmes or election promises are the following mentioned:

- Sustainability
 - Circular economy
 - Zero waste
 - Reuse
 - Waste prevention
-

☐ Find out what they mean by those terms:

- When people say "circular economy", they may mean "separate waste collection" or "recycling".
-

☐ Are these commitments:

- Binding targets?
 - Pilot projects?
 - General or vague aspirations?
-

☐ Have any commitments been translated into:

- Strategies?
 - Action plans?
 - Regulations?
-

☐ Which political actors publicly "own" these commitments and can be held accountable?

3. Follow the money: see the budget.

Budgets show real priorities. Use these questions to understand financial decision-making.

- ☐ When is the municipal budget confirmed each year?

- ☐ What strategic documents have been created based on the budget?

- ☐ Which department or political body is responsible for proposing the sustainability-related budget?

- ☐ Is there a specific budget line for:
 - Waste prevention?
 - Reuse and repair?
 - Awareness-raising and community engagement?
 - Circular procurement?

- ☐ Who is politically responsible for zero waste or circular economy funding decisions?

4. Map responsibility for implementation.

Policies only matter if they are implemented.

- ☐ Which municipal officials or departments are responsible for implementing:
 - Waste management?
 - Reuse?
 - Sustainability policies?

- ☐ Are responsibilities:
 - Concentrated in one department (e.g. waste management), or
 - Fragmented across departments (e.g. procurement, environment, events, education)?

- ☐ Who drafts:
 - Technical documents?
 - Feasibility studies?
 - Tender specifications?

5. Identify influence points in the process.

Timing is critical for effective advocacy.

- ☐ What is the timeline for:
- Municipal budget discussions?
 - Strategy or policy updates?
 - Local elections?
 - National elections?

☐ At which stages is public or stakeholder input formally possible?

☐ At which stages (before consultations) is the influence most realistic?

☐ Who should be your contact person at the municipality?

6. Ensure accountability and follow-up.

Accountability turns commitments into action.

☐ How is progress on waste prevention or the circular economy measured locally?

- ☐ Are targets monitored publicly?
- Who monitors them?
 - Where can the data be found?

☐ What reporting mechanisms exist between local and national authorities?

- ☐ Who can be held accountable if:
- Targets are missed, or
 - Policies are not enforced?

Example exercise

This will help you critically assess whether political promises on sustainability and zero waste are reflected in actual decisions and spending.

Start with the overview of political statements.

Data to analyse:

- Election programmes of governing party/parties.
- Public speeches or media interviews by the mayor.
- Press releases announcing sustainability or zero waste investments.

Next analyse the municipal budget.

Data to analyse from the budget:

- Identify relevant budget lines linked to waste, reuse, or the circular economy
- Check whether funding is:
 - A new investment, or
 - Ongoing operational costs?

When data is gathered, have a discussion with a co-worker or a friend. The aim is to compare election promises with where money is actually invested once a politician is in office.

For example, the mayor uses a press release to announce “2.1 million euros invested in sustainability” but the budget document reveals this amount mainly covers operational costs or debt repayments for infrastructure that already exists.



Before reading on, think:

Why is calling this spending an “investment” incorrect?

What follow-up questions should be asked to decision-makers?

What could you do to clear this misleading framing/communication?

Why is calling this spending an “investment” incorrect?

It’s like saying you “invested 200 euros in your car” when you actually just paid for gas and an old car loan.

- Investments should build something new (like adding solar panels).
- Operational costs are just keeping the lights on (like paying the electric bill).
- Debt repayment is paying for the past, not the future.

It is misleading the public: “Investment” implies a proactive, forward-looking choice. If the money is actually going towards debt and overhead, the city is not becoming “more” sustainable; it is simply staying creditworthy.

What follow-up questions should be asked to decision-makers?

To cut through the political framing, you should ask questions that force a distinction between legacy costs and new initiatives:

- **The breakdown:** “Can you show us what percentage of this money goes to salaries and debt versus building new infrastructure?”
- **The impact:** “What will this 2.1 million euros actually achieve this year that we haven’t already paid for in the past?”
- **The “Extra” money:** “If the majority of this sum is covering old debt and daily bills, how much extra money is actually available for new, innovative green projects?”

What could you do to clear this misleading framing/communication?

Translate the “government-speak” into plain language and visual information for the public:

- **Use a chart:** show a pie chart labeled “Where the money actually goes.” If a huge slice is “Debt,” people will see it’s not a “new” investment.
- **Change the label:** don’t call it the “Sustainability investment.” Call it the “Sustainability maintenance fund.”
- **The “New vs. Old” test:** publicly highlight that none (or very little) of that 2.1 million euros is actually buying anything new for the city.

See more examples from the *Waste Policy and Advocacy* chapter about how power works and what your role could be in influencing policies.

If all this seems like too much at first, think of these two starting points:

- Follow the decision-makers: Identify who actually decides, not only who speaks publicly.
- Follow the budget: Promises matter less than what is funded, when, and for how long.



The goal is not to become policy experts, but to learn where to look, what to question, and when to act. In this way, all of us can actually influence policy making.

COMMUNICATION AND STORYTELLING

Author: Kadi Kenk

Opening questions for the reader before reading:

- What do you want to know most about zero waste communication?
- Who is the target audience of your messages?
- What is the role of your audience in zero waste?
- What could zero waste mean to them?
- Is explaining zero waste difficult or easy to do? Why?
- How do you feel when you are challenged with a question or counter-argument?

Once we have discovered the world of zero waste, it becomes the only right thing to do in our minds. But not everyone thinks like this. Your audience and choice of communication strategy depends on what your purpose is. You may wish to raise awareness in the general public or need someone to take concrete action. In any case, your mission is to find a way to get people to care about zero waste in order to get them on board with your ideas.

The challenge is to be able to identify if people merely lack information, or do they have misconceptions and lack a systemic understanding of the connections between these issues and zero waste. Misinformation, disinformation and uncontrollable social media spheres make understanding what people know and believe even more difficult. This is why we are offering some basic rules to plan your communication that helps you to stay focused. In this chapter you will find:

- **Basics of communication** highlights the role of psychological needs to establish a meaningful relationship with your audience.
- **Communication and values** focus on thinking about what kind of society we are helping to build, even if you are working only on a narrow aspect of zero waste.
- **Planning your communication** gives you a practical tool on how to determine which messages are relevant for your audience.
- **How to choose your audience** is another method on how to analyse your communication plan based on the role the audience plays in relation to your goals.
- **Narrative and storytelling** shows how well framed stories turn information into meaning, reduces resistance, helps people remember messages, and makes change feel possible and human. We hope this inspires you to become the lead narrator instead of letting the story write itself.

BASICS OF COMMUNICATION – THE THREE PSYCHOLOGICAL NEEDS

The first thing to remember is that every person needs motivation in order to do something. In the *Learning Motivation* chapter of the Trainer Handbook we have distinguished between controlled and autonomous motivation. To encourage deeper understanding and long-term commitment, we should support autonomous motivation. This is achieved by supporting the three basic psychological needs of the people we communicate with. This means supporting:

- **Relatedness** – howing genuine interest and understanding in the thoughts and opinions of other people, recognising their feelings, responding without judgement, making them feel that their contribution is valued and they are a part of a group.
- **Competence** – speaking with people on the level understandable to them, not using field-specific words with a non-expert, helping to understand what is expected of them, what should be done to solve the problem at hand and if needed, helping to do it, at the same time treating them like thinking and capable beings who can take up a challenge.



- **Autonomy** – not forcing your own thoughts and ideas on to people, allowing them to find their own meaning and purpose in the topic, guiding them to find answers to their questions themselves and at their own pace, giving them a choice to make a decision on their own; not letting them feel guilty, controlled, or forced to think, feel or behave in a certain way.



One of the easiest ways to put this into practice is asking questions from people about their views and understandings and **truly listening**, before offering our own (expert) perspective, stating our own proposals and explanations. This also means genuinely being interested in their answers and not bombarding them with questions in an interrogative manner, but rather showing an **open curiosity**. You can read more in-depth about supporting the basic psychological needs from the *Learning Motivation* chapter in the Trainer Handbook.

Asking questions is also a good way to approach people who hold some zero waste misconceptions. In order to truly correct someone's misconceptions, they need to reach the understanding themselves that they have a misconception, which is also connected to supporting their three basic needs. Just stating our correct information to people often does not change their mind. Different methods for correcting people's misconceptions can be found in the *Misconceptions* chapter of the Trainer Handbook.

The reason we need to explore how to communicate is because we are talking to people who do not yet share zero waste values or don't have the same knowledge as us. And this compromises our own three basic needs, e.g. we feel that our concerns are not being taken seriously. The challenge of remaining curious and listening openly is that the issues we discuss often feel pressing and urgent. Allowing the other party to take time to comprehend your meaning may feel frustrating. It is a natural response to become defensive and irritated. What we are pointing out is the importance of acknowledging that and improving your skills as an effective communicator.

Understanding another's point of view *does not mean* agreeing with it.

You cannot force your ideas on anyone. Nor is there a simple way to correct an erroneous opinion. In fact, criticism of a person's point of view makes them more likely to confront you and become more convinced of themselves.

The key to effective communication, regardless of whether you are writing an e-mail, designing a poster or attending a meeting is to try to see the message from your audience's point of view and design it in a way that feels non-judgemental and relatable.



Exercise 1 (Part 1):

Look at these small situation descriptions. What basic needs are being compromised in these examples?

- At a meeting with a city officer, opening with how the city's waste management is falling behind and showing how the existing solutions do not make any sense.
- Printing a tote bag with a message "My reusable bag is judging your plastic bag".
- A social media post that declares that people who don't sort their waste are the reason our system fails. A call to action is: "Stop being careless and do your part!".

Write down your guesses and also how you would act instead. To check out our ideas for alternative messaging in these situations, see Exercise 1 (Part 2) on page 111. You will find more examples from the *Learning Motivation* chapter in the Trainer Handbook.

COMMUNICATION AND VALUES

There is almost **no neutral human interaction or communication**, as we don't sense the world neutrally. It always comes through a filter of pre-knowledge, experiences, opinions, values – it's part of being human. Even the things we call neutral, in their deep essence mostly are not so. Our sense of rationality is often just our skill of finding rational explanations to our irrational behaviours. But that's another story.¹ What is important to remember is that both the sender and receiver of messages see things subjectively, carried by some assumptions and attitudes connected to our values and bigger life goals. In very broad terms our thinking, communication and in turn our actions are carried by either intrinsic or extrinsic values.

- **Intrinsic values** – creating and keeping close relationships, personal growth, health, contributing to your community.
- **Extrinsic values** – power and economic success, having material wealth, fame, being popular, looking attractive.

As written in the *Zero Waste, Wellbeing and Values* chapter, zero waste solutions are closely connected to intrinsic values. These values are also something we want to support in and through our communication. We can use them as a source of inspiration on how to talk and what to talk about with our audience. It starts with the words we use.



Before reading on, think: what is the difference between these sentences?

- 1. Taxpayers' money is being spent on buying new recycling bins.**
- 2. Public investments are made into improving recycling efforts with new recycling bins.**

¹ If you are interested in the deep irrationality of human nature, read: Ariely, D. (2010). *Predictably Irrational*.

One of these statements stresses individualistic, extrinsic values, while the other focuses more on the common good, intrinsic values. When talking about money, there is always a choice to be made. We can either focus on how much of it is used on anything or emphasise what we need this money for, what kind of life quality it can bring to the wider community. The more we shift the focus from extrinsic to intrinsic values, the more successful we are in helping the audience understand the meaning of our actions.

An obvious way to support values is to talk directly about them. For example how zero waste solutions like food sharing initiatives or repair centres help to support a sense of community between citizens. As an effective communicator, you would also know and be forever curious to learn about other initiatives supporting intrinsic goals and which other benefits are associated with them. This is all about knowing what makes your audience tick and offering them, in return, information/expertise about what they value the most.

Let's explore a few examples on how zero waste benefits can be introduced through different angles to intrinsic values, which may not be the ones that matter most to you.

Who do you think could be motivated by these arguments?

Example 1: Zero waste boosts care of place.² Better maintained, cleaner and greener neighbourhoods often have lower rates of theft and break-ins and discourage potential crimes.³

Example 2: Negative brand association. People are unwilling to pay the usual price on a product if its packaging is frequently seen as litter and thus the product itself is perceived to be worth less. One study has been able to quantify that such negative perception could lead to a 2% drop in a company's turnover.⁴

Example 3: Waste reduction related activities have social benefits. E.g. food banks help to reduce food waste, relieve hunger and grow solidarity among community members.

For more explanations and guidance on how to work with values and how to support the intrinsic values in our communication, a good resource is the [Common Cause Handbook](#) .



PLANNING YOUR COMMUNICATION

Planning communication is in essence a set of actions to ensure that your message reaches the right people in order to have impact.

Effective communication requires that you talk to the right people and tell them the right things. To determine this, ask yourself and draft a mindmap addressing these key questions:

² Read examples of behavioural intervention methods and their effectiveness from: Spehr, K., Curnow, R. (2015). *Litterology*.

³ EzLandLordForms (2015). [How Surprising Neighbourhood Factors Like Trees & Trash Impact Crime Rates](#) .

⁴ Brailsford Parish Council (2021). [Litter: its impact on local communities](#) .

1. Who are you talking to? Do you know your target group (who they are, what they know, how they think, why they do the things they do)?
2. What do you need them to know?
3. What do you need them to do?

The more specific you are, the better. That will allow you to craft the right message⁵ and focus on the most effective channels. Sometimes there is that one key person you need to talk to. Often it is more people and it may happen that at first sight it is unclear who you really need to address or what you really need them to know/believe/understand in order for your desired change to happen.

How to choose your messages

There are many tools to help craft the right messages. If you have an opportunity to have a dialogue with your audience, the best way is to ask and listen. But for less approachable audiences, we suggest here the **micro-targeted audience analysis**. You will find that communication planning this way also helps you with strategising, using the formula

WHY + COMMUNITY/AUDIENCE + BEHAVIOUR

The benefit of micro-targeting is

- speaking to **one decision-maker group**,
- addressing **their fears, beliefs, and incentives**,
- avoiding blame,
- building competence, autonomy, and relatedness,
- leading directly to **practical next steps**.

Try out this method, with this exercise.

Exercise 2 (Part 1):

The city currently has opted to prefer single-use biodegradable dishes at public events with the intent to reduce plastic waste. Your goal is to help the city transfer to reuse dishes. Below are the steps that guide your communication planning with micro-targeted audience analysis. Write/draw your scheme before checking out our ideas for using this method. See Exercise 2 (Part 2) on page 112.

STEP 1: Formulate a precise guiding question.

WHY + COMMUNITY/AUDIENCE + BEHAVIOUR.

Why _____ (this specific group) _____ (does this specific action)?

STEP 2: Define the primary target group.

⁵ Simple and helpful guide to understanding why some messages stick and others not: Heath, C., Heath, D. (2006). *Made to stick*.

STEP 3: Identify key influencers of this target group.

Ask: Who shapes your audience to think or act? Try to stretch your list to more than the usual suspects. The more detailed you are, the more opportunities it will give you.

STEP 4: Identify beliefs behind the current behaviour.

Ask: What do they believe to be true?

STEP 5: Identify emotional drivers (why the current action feels right).

Ask: What feelings does this decision protect or create?

**Before reading on, think: why is it important how they feel?**

Because emotions help us understand what is important to people, where they feel confident, where they are insecure. Emotions can give us information on what they know and believe in.

STEP 6: Identify emotional payoffs of choosing biodegradables.

Ask: What does your chosen target group get from this choice?

STEP 7: Identify what threatens their basic psychological needs.

How do you think making your proposed changes affect their three basic needs? Understanding this explains resistance to change and informs what other activities you should plan.

STEP 8: Define what the target group needs to feel safe changing.

This helps you not only think about how to deliver your message but also, informs you of additional actions YOU should take.

STEP 9: Reframe your proposal (reuse) to align with their needs.

After Step 8, you have information to reframe your proposal (reuse). By now, you have revealed how your viewpoint is possibly different from that of your audience.

Framing is the way an issue is presented so that people understand *what it is about*, *who is responsible*, and *what kind of solution feels reasonable*. Framing decides how people think about a topic before they even start debating it.

STEP 10: Craft a communication strategy based on the analysis.

In 3-5 sentences, write your proposal. Use clear messaging and keep in mind the previous steps and what your audience *needs to hear*. Not what you want to tell them.

It is also good to be prepared to offer next steps, should they agree to change. Which next action would they be able to consider?

NARRATIVE AND STORYTELLING

The world around us consists of stories and narratives. Are any of these familiar to you?

- New technology will fix the problems created by old technology.
- Men should be strong; women should be caring.
- Failure means you're not good enough.
- Nature is a resource for humans.

A **story** is one single tale with a beginning and an end and with an **underlying moral**.

A **narrative** is a collection of these stories. It can influence the way people generally think of a certain topic, organisation or a person. Narratives are not facts. They are shared stories that quietly shape what feels normal, possible, and acceptable..



Most often, zero waste work involves shifting parts or the whole social narrative around waste. That may mean anything from addressing littering behaviour to designing national zero waste strategies. In order for a narrative to change, we can use stories as tools everywhere: in social media posts, blogs, articles, researches, campaigns and meetings.

You can probably recognise one or all of these:

- "Impossible is nothing"
- "Gives you wings"
- "A city that never sleeps"

! Narratives don't change by arguing harder. They change by telling a better story.

Exercise 3 (Part 1)

Try to reframe the narrative below. The guiding questions will help you analyse it. Then write down a version of your own. Then you can check our proposed approach in Exercise 3 (Part 2) on page 115 and an example about how it has been done in practice.

STEP 1: Analyse the dominating narrative.

The dominating narrative: single-use plastic is normal, littering is bad.

- Do you agree with that or not? Why?
- What makes the current narrative powerful?
- Who is doing the wrong thing in this narrative?
- Who or what should change?
- How does that sway your attention?
- What systemic problems do you see with this narrative?

As long as this frame stays dominant, any alternative system that prioritises higher levels of the waste hierarchy, will never be regarded as the obvious solution.

With each story we tell, we can help challenge the old narrative and establish a new normal.

This means new framing and helping to answer the questions:

- What is it about?
- Who is responsible?
- What kind of solution feels reasonable?

STEP 2: Propose an alternative narrative.

How would you frame a new narrative? In a new narrative, answers to these questions should change compared to the old narrative:

- What is the core of the problem?
- Who is responsible?
- What kind of solution feels reasonable?



Before reading on, think: What kind of narrative shifting stories have you noticed around you? Why does understanding narrative frames matter?

The better we understand the narrative frame we are operating in, the more effective our communication becomes. If we stay within the old frame, we will keep proposing solutions that only manage waste. If we shift the frame, **prevention and reuse become logical and necessary**.

Storytelling does not need to be complicated. The easiest way to start is to choose a story you already know well and look at:

- Who the characters are?
- Who has power?
- Who faces obstacles?
- And how change becomes possible?

Then experiment with shifting roles – including your own – and placing your audience in a position where they can succeed. Just remember:

✗ Your audience should never be the villain.

✓ Ideally, your audience is the **hero** of the story.

In some cases, they may play another positive role – such as a mentor, enabler, or supporter – who helps the hero succeed. Imagine Yoda, Gandalf, Fairy Godmother. They are not the main heroes but they do have a role that is irretractable from the hero's journey. When people see themselves as part of the solution, they are far more open to change.

Storytelling is an art in itself, but the easiest for anyone to get started with it, is choosing a story you like and know best and start investigating the dynamics of the characters and playing around with your role and the role of your audience.⁶

⁶ Find inspiration to build your story: Amlani, A., Bertels, S., Hadler, T. (2016). [Storytelling for Sustainability](#), Embedding Project.

The hero story

Someone faces a problem, struggles, grows, and succeeds.

"Your city can become a zero-waste leader – others have done it, and so can you."

Most stories we hear and tell are hero stories. A good story consists of elements that each listener craves for and allows for your audience to follow and keep or lose interest. It doesn't matter if it is a 30-second pitch, a graph or a training session, the full story or a segment of it can be present in them all. What role have you assigned to your audience? Do you think it is an active or passive role? Is the audience a positive or negative character? How would you like your audience to identify themselves?



The hero story in practice:

Imagine you are presenting an idea of separate collection to your local municipality, using the example of [Ljubljana](#) since they are comparable in size and profile. It is good to get acquainted with the resources provided by Zero Waste Europe for these case studies. You want your audience to empathise with Ljubljana through the struggles they faced in the beginning and the success they are attributed after. You want Ljubljana to be the hero and your audience to feel inspired to be the hero too.

Alternatively, imagine if you walked in the room like you are the saviour of the city and the municipality representatives (your audience) are the obstacle that keeps you from overcoming the evil. What reactions do you think this would provoke in your audience?

The underdog story

Someone unlikely to win succeeds against the odds.

"A small town proved that reuse works – even without big budgets."

This is the story of someone who is most likely to lose. Are you in a position of most likely losing? Describe the apparent hopelessness of the situation. What are the lucky events or hidden talents that can turn the situation for the better. Who is the villain? The underdog stories can be very powerful in making the audience feel like you need them to succeed. People root for fairness and courage.



Underdog story in practice:

Imagine presenting the idea of becoming the first Zero Waste City to a municipality that has always been considered the worst. It is lagging behind economically, its residents are moving to other cities and due to low income, it is losing its attraction as a place to live. The story of using its industrial heritage for developing new circular business models and providing new services, playing on the "nothing to lose" position for trying out new things, and imagining the potential for creating new jobs and transforming the community into a green and attractive one, can be just the boost the municipality needs for a new found morale. As long as you know what motivates your audience (see micro-targeted audience analysis), the worst place to start might become the best reason to get started.

Struggle stories

The focus is on mistakes, learning, and persistence.

“It didn’t work at first – but adjustments made it succeed.”

Often, in order to inspire others to follow the zero waste path or pursue anything really, we tell success stories of what others have achieved in this field. But studies⁷ have shown that people find it easier to relate to the struggles within those stories rather than just the successes, and even get them more interested in the field. **People relate more to struggle than perfection.** This means talking about and even putting the focus on the mistakes made and challenges met on that journey, and then how they were overcome and the success achieved. It’s more about sharing the story of the process, dead-ends and eventual progress, not just the achievement. On every hero’s journey, there is first the struggle with the way things are until there comes a ‘change or die’ moment that gives the hero the courage to take matters into their own hands and fight for a better new world.

The hero is just like us who makes mistakes and has doubts. It is natural for a hero to not succeed at first try. If it were so, the movies we watch and books we read would be much shorter. At our training courses we also ask the people sharing local zero waste case studies to tell their struggle stories. It’s the parts of their challenges and overcoming them, which are most captivating to listen to.

This is not to say that success stories are not good. There is a time and place for everything. Always look for the most valid examples or elements in any success story to spark your audience’s interest. It may be a surprisingly high separate collection rate or lowest waste management fees in the country.

But the rest is about making your audience believe that they can be just as good (or even better). More often than not, the struggle story is a tool to use with the target audience who actually has to make the change happen. They find comfort in knowing that others have faced the same challenges and that no one can know all and do everything perfectly at once.

Followers and supporters want to be encouraged and given confidence that they are following and supporting a winner, unless you are certain that you can play out to be a great underdog :).⁸ What do you think is the reason that successful crowdfunding campaigns kick off with an encouraging pre-agreed donation pool?

⁷ Lin-Siegler, X., Ahn, J. N., Chen, J., Fang, F.-F. A., & Luna-Lucero, M. (2016). Even Einstein struggled: Effects of learning about great scientists’ struggles on high school students’ motivation to learn science. *Journal of Educational Psychology*, 108(3), 314–328.

⁸ There is also charm in being an underdog. It is really about the way you are writing your story and which archetypes you believe will work out best for you. Further reading: Harvard Business Review (2010). [Capitalizing on the Underdog Effect](#) [7].

How to tell a story?

Once you know your target group and you know what you want them to know, there are unlimited ways to convey your message. The first key element to success is obviously – you! Your passion, interest and understanding of the topic but also, what makes you most comfortable.

If your super power is data, present that. Data becomes a story when it shows change, cause, or consequence that people can relate to.

Raw data: “The city generates 15,000 tonnes of event waste per year.”



Storytelling with data: “Every year, public events generate enough waste to fill 300 garbage trucks – most of it used for just a few minutes.”

Raw data: “Before reuse, the festival produced 20 tonnes of waste. After reuse, waste dropped to 3 tonnes.”



Storytelling with data: “Switching to reusable cups removed 17 tonnes of waste in one summer. That is an 85% reduction of waste generation!”

Raw data: “Incinerating disposable cups costs 120 euros per tonne.”



Storytelling with data: “Every disposable cup at events costs the city twice – once to buy, and once to burn.”

If you are easygoing and sociable, use a conversation to be approachable and share personal learnings.

- “That reminds me of a festival where we tried reuse for the first time...”
- “Let’s talk about the moment you realised the system wasn’t working.”
- “We learned something interesting when the city tried reuse...”

Always keep in mind to support your audience’s three basic needs. Whether you are advocating a new policy, presenting data to illustrate your point or talking about the technicalities of waste treatment, you can always be mindful of your audience’s need to make sense of things in a familiar way.



Before reading on, think: What kind of mistakes have you made or witnessed others make when presenting?

Just because your graph⁹ is correct doesn’t make it automatically interesting nor comprehensible. If you struggle making your data interesting, at least allow your audience to draw conclusions themselves from the information you present them. Regardless of whether they are wrong or right, a dialogue is always better, unless the format doesn’t allow it.

⁹ It is not a coincidence that a graph is used here as an example to illustrate a possible mistake in addressing your audience. A graph equals a slide that has too much text on it. If you want data to really make an impact, make sure the information you want the audience to know really stands out. And that is either one single point or three interesting finds the most. For some tips on how to present your data better, check the *Waste Data Basics* chapter.

Common mistakes:

- ✗ Dumping all data at once.
- ✗ Using data to prove people wrong.
- ✗ Assuming numbers speak for themselves.
- ✗ Long written reports.
- ✗ Data-heavy slides without interaction.

When presenting, have comfort in having slides to back you up but avoid overwhelming people with information. Always come back to reminding yourself, what was that one thing you needed them to know, understand and act upon? All the rest is supportive information to achieve the initially set goal. True success depends on whether and how well your audience **feels their concerns and questions** about the topic are being addressed.

For exploring, practicing and preparing how to approach and communicate with stakeholders, you can use this training [video](#) . Imagine, how would you feel in the shoes of the different parties in the video and look for possible exercises to go with it in the *Training Video Guide for Zero Waste Practitioners*. What in the way people talk, look and behave support the three basic needs and what is in breach of them?

Exercise 1 (Part 2)

INSTEAD OF:	TRY:
At a meeting with a city officer	
This city's waste management is falling behind, the existing solutions do not make any sense...	→ I know waste management decisions are complex ... I would like to understand ...
Printing a tote bag	
My reusable bag is judging your plastic bag.	→ Carry the change you want to see in the world.
Social media post about separate collection	
People who don't sort their waste are the reason our system fails. Stop being careless and do your part.	→ Did you know? Sorting your biowaste can reduce your trash by 50%. What if everyone on your street did the same? Imagine the difference. Start today—one bin change takes 20 seconds.

Exercise 2 (Part 2)

The city currently has opted to prefer single-use biodegradable dishes at public events with the intent to reduce plastic waste. Your goal is to help the city transfer to reuse dishes.

Your question could be: “Why does the city allow single-use biodegradable dishes at public events?”. The more specific about the question you are, the easier it will be to take the next steps.

STEP 1: Formulate a precise guiding question.

✗ Too vague:

“Why doesn’t the city choose reuse?”

✓ Micro-targeted and actionable:

“Why do city event officers approve biodegradable single-use dishes for public events instead of reusable systems?”

STEP 2: Define the primary target group.

Primary target group:

City administration staff because they are responsible for:



- event permits,
- public procurement,
- sustainability or waste guidelines for events.

! Precision is key. You cannot reach everyone and you cannot communicate everything at once. A web of stakeholders tempts us to want to communicate with many parties at once. For impactful communication you better prepare well who you are talking to and what action is required for change. Without clear prioritisation, your message can easily become diluted or lose its intended impact. This does not mean that you cannot communicate with many target groups, but separate analysis would be required for each individually.

STEP 3: Identify key influencers of this target group.

Ask: Who shapes how these officers think or act? Try to stretch your list to more than the usual suspects. The more detailed you are, the more opportunities it will give you.

Likely influencers:

1. National or EU waste legislation and guidelines.
2. Internal city sustainability strategies.
3. Legal department (risk avoidance).
4. Procurement rules and existing framework contracts.
5. Other “model cities” used as benchmarks.
6. Media narratives about “green events”.
7. Event organisers complaining about complexity or cost.
8. Coalition agreement/political priorities.



STEP 4: Identify beliefs behind the current behaviour.

Ask: What do they believe to be true?

Common beliefs:



- "Single-use biodegradable dishes are environmentally friendly."
- "Reuse is complicated and risky."
- "Biodegradable items are legally safer."
- "Reuse requires washing infrastructure we don't control."
- "Events need simple, fast solutions."
- "The public expects 'eco' but not behavioural change."

STEP 5: Identify emotional drivers (why the current action feels right).

Ask: What feelings does this decision protect or create?

Why is it important **how they feel**? Because emotions help us understand what is important to people, where they feel confident, where they are insecure. Emotions can give us information on what they know and believe in. Look more from the Learning Motivation chapter in the Trainers' Handbook to distinguish between controlled and autonomous motivation, to help you work with people's pre-knowledge and feelings for a meaningful and long-lasting impact.

Emotional drivers:



- Safety: "We are following the law."
- Relief: "This is easy and already approved."
- Pride: "We can label events as green."
- Risk avoidance: "No one can blame us for this choice."
- Control: "We can enforce this with permits."

STEP 6: Identify emotional payoffs of choosing biodegradables.

Ask: What does your chosen target group get from this choice?

Emotional payoffs:



- Feeling competent and compliant.
- Avoiding conflict with event organisers.
- Avoiding extra workload.
- Feeling environmentally responsible.
- Receiving positive feedback instead of complaints.

STEP 7: Identify what threatens their basic psychological needs.

Imagine if you are promoting reuse as an alternative that has not been proven to work, has not received acceptance in the eye of the public and is not prescribed in the law. Your offer to them is provoking insecurity, risk of failure and becoming a bad example.

Ask: How do you think this affects their three basic needs?

Switching to reuse may feel like:

Psychological need

Perceived threat

Competence	→	"I don't know how reuse systems work."
Autonomy	→	"I'm being pushed by activists."
Relatedness	→	"Event organisers will be angry at me."

Understanding this explains resistance to change and informs what other activities you should plan.

STEP 8: Define what the target group needs to feel safe changing.

Before proposing reuse, they likely need:



- Proof reuse works in comparable cities.
- Clear legal backing or guidance.
- Simple operational models.
- Pilots instead of full roll-outs.
- Shared responsibility with organisers or providers.
- Political cover ("this is city policy, not my idea").

STEP 9: Reframe your proposal (reuse) to align with their needs.

Framing is the way an issue is presented so that people understand *what it is about, who is responsible, and what kind of solution feels reasonable*. Framing decides how people think about a topic before they even start debating it.

This exercise reveals how your viewpoint is possibly different from that of your audience. That it is not only about knowledge, but also the context of where your audience operates. For example, your values and knowledge would frame reuse as:

"The better environmental choice"

After Step 8, you have information to reframe your proposal (reuse) as:



- Lower risk (tested elsewhere).
- More compliant (waste prevention hierarchy).
- Easier to control long-term.
- Cheaper over multiple events.
- Aligned with future regulation.

STEP 10: Craft a communication strategy based on the analysis. What is the difference between the below examples?

✗ What not to say:

"Single-use biodegradable dishes are greenwashing."

✓ What to say:

"Many cities started with biodegradables for the same reasons you did – legal clarity and ease. What they discovered later was that reuse actually reduced complaints, costs, and workload once systems were in place. Would you be open to exploring how they managed the transition step by step?"

To be prepared and make it easier to consider your proposed alternative, define what could be the next best actions. What makes the following proposals easier or harder for the receiver to accept?

✗ Not:

“Ban single-use biodegradable dishes.”

✓ But:

- Propose a **pilot reuse requirement** for one event type.
- Suggest **reuse as default, disposable by exception**.
- Include **reuse providers** in city framework contracts.
- Update event guidelines with **clear reuse pathways**.

Exercise 3 (Part 2)

STEP 1: Analyse the dominating narrative.

The dominating narrative: single-use plastic is normal, littering is bad. The solution in the majority's mind is to educate people to separate waste and not litter. What makes the current narrative powerful?

- Single-use plastic = normal and unavoidable
- Littering = bad individual behaviour
- Solution = educate people, add bins, separate waste

What this narrative does:

- Shifts responsibility to individuals.
- Makes waste a behaviour problem, not a design problem.
- Makes prevention (reuse, bans, redesign) seem unrealistic or “too radical”.

As long as this frame stays dominant, **reuse will always look like an extra effort**, not the obvious solution. With each story we tell, we can help challenge the old narrative and establish a new normal.

This means new framing and helping to answer the questions:



- What is it about?
- Who is responsible?
- What kind of solution feels reasonable?

STEP 2: Propose an alternative narrative.

We can shift the narrative to this:

“Using any durable material only once is wasteful by design.”

By reframing the issue this way, responsibility shifts:

- from individual behaviour;
- to product design, market choices, and producer responsibility.

Single-use plastic packaging is not inevitable. It has only existed for a few decades, and in most cases it is avoidable. The problem is not that people fail to sort waste properly – it is that companies continue to place single-use products on the market.

Even when waste is collected separately, much of it is still incinerated or landfilled. Many single-use items have little or no value on the secondary materials market, or are not recyclable at all. This means the promise of recycling often does not match reality.

How this narrative shift has already been used:

Civil society organisations have been making **public transparency requests** to corporations about how they plan to address the waste created by their products, as part of their producer responsibility. This helped open a new public conversation: who creates single-use plastic waste – and who has the power to solve it?

Initiatives such as [Brand Audits](#)  made the problem visible by clearly linking waste found in the environment to specific producers. These actions helped educate the public, shift responsibility upstream, and challenge the idea that waste is mainly a consumer problem.

Closing questions for the reader to reflect upon:

- Which parts in this chapter were most confusing or difficult for you to understand? What do you think made them challenging?
- What makes you listen to other people and get on board with their ideas?
- In your experience in talking about zero waste, what kind of questions, facts, stories have seemed to work the best? How do you know they worked?
- What do you want to take with you from this chapter?
- What do you want to know more about?

ENGAGING PEOPLE AND AWARENESS-RAISING ACTIVITIES

Authors: Kristiina Kerge, Kadi Kenk and Jaka Kranjc

Opening questions for the reader before reading:

- What do you want to know most about engaging people in zero waste activities?
- What kinds of awareness-raising activities are you involved in as organiser and what are their goals?
- Who are the main groups of people involved in these activities?
- What level of engagement do these activities enable for participants?
- Why do people sometimes still resist change even after many awareness-raising activities?

WHY ENGAGEMENT MATTERS FOR SUSTAINABILITY

Sustainability and zero waste strategies do not succeed through infrastructure or policy alone. Even the most progressive waste prevention policies and technically sound systems depend on people's understanding, trust, and willingness to participate. For sustainability and zero waste practitioners and supporters, engaging people is therefore not an "extra activity", but **a core practice** that connects policy, infrastructure, and everyday behaviour.

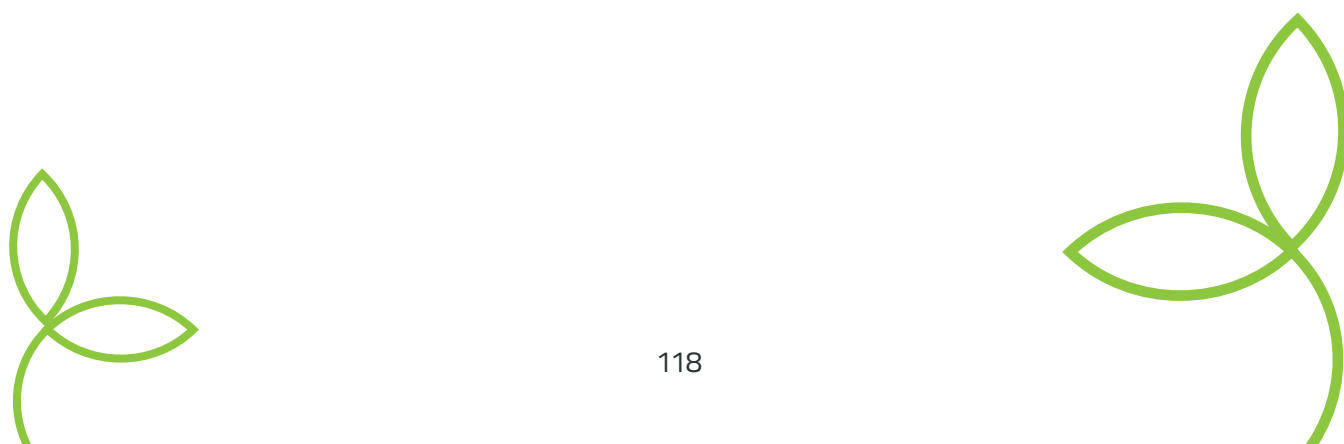
For **example**, a well-designed reuse system may fail if residents do not understand where items go, why the system matters, or whether their participation makes a visible difference.

Engagement serves multiple purposes simultaneously:

- it raises awareness and creates opportunities to correct misconceptions;
- it builds legitimacy and public support for policies;
- it shifts responsibility from individuals alone to shared, systemic solutions.

First and foremost, engagement should always support the three basic psychological needs: relatedness, competence, and autonomy. This means trying to see things from your target groups' perspective, making their ideas feel welcome, being clear about what is expected of them and how exactly can they contribute, allowing them to find their own meaning in the topic and if possible, giving them meaningful choices (meaningful from their perspective). You can read more about the three basic needs from the *Communication and Storytelling* chapter of this handbook and from the *Learning Motivation* chapter of the Trainer Handbook.

On the other hand, engagement activities are also a form of advocacy, shaping narratives, norms, and what feels socially acceptable. You can read more about this from the *Waste Policy and Advocacy* chapter. In this chapter we focus on how to enable the success of sustainability and zero waste strategies by connecting policy, infrastructure, and everyday behaviour. We explain different levels of participation – from informing to partnering – and how they affect ownership, trust, and long-term results. The chapter also includes many practical examples and shows how to design engagement activities that support motivation, reduce resistance, and enable meaningful, systemic change.



FROM AWARENESS TO ENGAGEMENT: LEVELS OF PARTICIPATION

Awareness means knowing that an issue exists or understanding a situation based on information or experience. However, awareness alone rarely leads to sustained change.

Engagement means working together with stakeholders to ensure their concerns and aspirations are reflected in the solutions developed, and that they receive feedback on how their input has influenced decisions.



Not all awareness-raising activities lead to meaningful engagement. It is therefore useful to distinguish between different levels of participation and to be explicit about what level of influence and responsibility people are invited to take in each context.

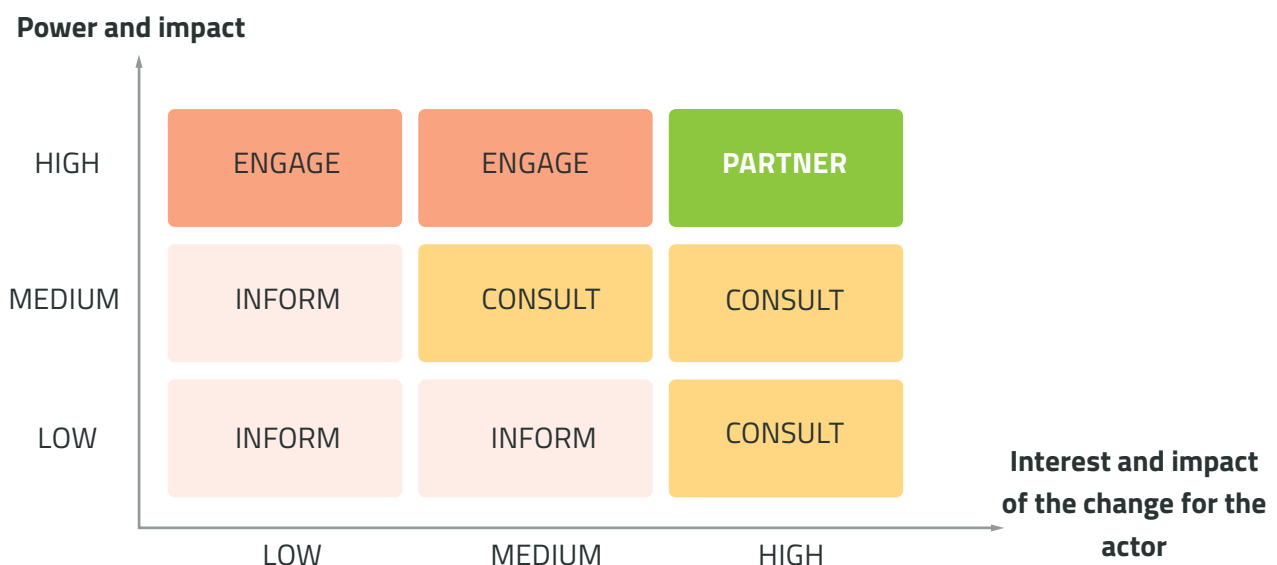


Before planning your activities, take some time and think about who should be engaged.

If you are unclear who the stakeholders are, the only real way to find out is by listing your assumptions and then testing them through conversations with people who may be affected or involved.

The power-interest grid allows you to understand who is important, where to allocate your energy, but also to avoid frustration from overwhelming engagement from those who do not need to attend every decision-making process or the feeling of being left out by those who feel that their opinions should be taken into account.

The power-interest grid



Exercise (part 1):

You are advocating for a local reuse system to be supported by municipality level regulation.

Take a pause and think:

- Who should be your partners?
- Who should you engage with?
- Who should you consult?
- Who just needs informing?

Read below to understand what each level means. Then after you have written down your own ideas, you can check our suggestions on page 122.

The following section gives an overview of the different types of communication shown in the power-interest grid, together with stakeholder examples.

Informing means providing balanced and objective information in order to assist in understanding the problem, alternatives, opportunities and/or solutions.

Goal: to make an issue visible and share information about projects, decisions, or systems.

Examples include newsletters, sustainability reports, media articles, interviews, and consumer-facing awareness messages.

This level is useful when:

- preparing the ground for future action,
- informing people about your upcoming project/ decisions.

Consulting means obtaining feedback on the analysis, alternatives, and/or decisions.

Goal: to listen to people and collect feedback to adjust or improve plans and decisions.

Examples include surveys on waste sorting systems, customer feedback, and employee questionnaires. Consultation can increase perceived fairness and transparency, but it does not automatically create ownership.

This level is useful when:

- you need to understand how the existing system or solution is perceived.

Engaging means working together to ensure that the stakeholder group's concerns and aspirations are directly reflected in the alternatives developed, while also providing feedback on how their input influenced the decision.

Goal: to co-create solutions and build shared responsibility.

Examples include workshops and co-design sessions, participatory pilots such as reuse systems at events or in workplaces.

This level is useful when:

- changes require stakeholder buy-in to sustain after your involvement ends.

Partnering means working together to formulate solutions and incorporate the stakeholder group's advice and recommendations into decisions to the greatest extent possible.

Goal: long-term collaboration and shared leadership.

Examples:

- **Long-term advisory groups working with municipalities on waste prevention:**
 - Local zero waste groups helping municipalities transition towards zero waste. Cooperation could be communicated using storytelling around "before–after" change. Story-based approaches align strongly with narrative framing discussed in the *Communication and Storytelling* chapter. More information: [Zero Waste Cities](#) .
- **Public events and visible demonstrations:**
 - Practical repair cafés and reuse pop-ups organized by third parties in support of the city's strategy with the aim to educate and promote new skills and waste prevention. More information: [Repair Café International](#) .

This level is useful when:

- systems or services are co-managed, and stakeholders have an active role in decision-making and implementation.

Exercise (part 2)

Here are our suggestions based on the power-interest grid, when you are advocating for a local reuse system to be supported by municipal-level regulation:

- Your **partner** is the municipality drafting the local law.
- You should **engage** with the companies and associations who are directly impacted by the law and who are in consultative status with the municipality.
- You should **consult** users or alternative service providers who are impacted by the change but who do not dictate the dominating narrative (the story most people already believe) yet, such as reuse system providers, supervising agencies who determine what alternatives can operate and shops, cafeterias and other user groups to understand their needs for adjusting to new systems.
- You should **inform** the general public who is the end user of reuse packaging. They are the ones whose behaviour and attitudes do not affect the law directly, but who can have a direct impact on influencing the process and discourse of the legislative process.

AWARENESS-RAISING ALIGNED WITH HUMAN PSYCHOLOGY



Before reading on, think about a time when a campaign, event, or message made you feel genuinely involved and motivated to act. What made it feel meaningful rather than pressuring?

Awareness-raising in sustainability should avoid fear-based or manipulative messages. Such approaches often undermine people's sense of autonomy by creating pressure, guilt, or defensiveness, which can trigger resistance rather than engagement. Fear and shame may capture attention, but they rarely support lasting change. Instead, we want to create curiosity and interest, while supporting a sense of safety.¹

It is important to keep in mind that how we communicate influences motivation.

Effective awareness-raising for change:

- focus on benefits, not guilt,
- emphasize collective impact rather than individual blame,
- connect waste prevention to everyday life quality,
- highlight what people can do within supportive systems.

For more information on how to work with human values, read the *Zero Waste, Wellbeing and Values* chapter and check out the [Common Cause resources](#) .



¹ More about this in the *Learning Motivation* chapter in the Trainer Handbook

Nudging

Behaviour change can be supported and triggered through **nudging** – small changes in the environment that make more sustainable choices easier without limiting freedom of choice.



Nudging interventions are almost an art form and can easily be ineffective or even have negative effects when not designed properly.

Here are some examples:

- Some are more subtle than others – Chile successfully reduced jaywalking by employing mimes to mock people that do it.
- On the other hand Miramas, France, was successful at reducing public urination at their main train station by commissioning beautiful graffiti at the hotspot that also used perspective to jointly shift the perception of the place.
- A common example of waste related nudging would be providing smaller plates to buffet guests to discourage overfilling that leads to food waste. They are always welcome to return for more, but this way both the frequency and amounts of leftovers decrease.
- Another example was developed when trying to get event visitors to separate their waste in a park under cultural heritage in Maribor, Slovenia. The first year the dispersed fixed-in-place bins in the park were each assigned one fraction of waste for collection and marked as such. Despite that, the results were poor, with visitors throwing trash in the nearest bin regardless of type. The following year bin covers were used, directing visitors to dispose of their waste at designated “eco islands” with all types of bins. It also didn’t work well, as people were putting waste on the covers or lifting them first with predictable results. The third year the second attempt at nudging finally gave the desired outcome: putting living potted plants into the bins was enough to discourage people from throwing waste inside. As with any other measure, this example shows that one needs to be prepared to adapt and change their approach to make nudging effective.
- Many events combat littering by presenting voting boxes, typically for cigarette butts. The idea is to offer some popular dilemma and use the visitor’s conviction or sense of (regional) belonging to encourage proper disposal. The question posed may be “Who will win the Euro finals, Barca or Real Madrid?”, “Beer A / B?”, “Is tomato a fruit or a vegetable?” ... The more controversial the question, the better. In fact, in one case the measure was too successful, as it prompted kids to pick up littered butts and pester smokers for more. This shows why nudges should always be assessed for possible unwanted side effects.



The European Commission has a dedicated centre – Competence Centre on Behavioural Insights (CCBI), that supports policymaking with evidence on human behaviour, their resources can be found from the [European Commission Joint Research Centre page](#) .



HOW ORGANISATIONS CAN SUPPORT ENGAGEMENT FOR SUSTAINABILITY

Effective engagement for sustainability requires the combined efforts of the public sector, private sector, research institutions, and the third sector (NGOs). Public authorities create enabling frameworks, policies, and spaces for participation. Businesses shape everyday practices through services, products, and innovation. Research institutions provide evidence, data, and insights for informed decision-making. NGOs mobilise communities, advocate for change, and bridge stakeholder groups.

As highlighted in the *Waste Policy and Advocacy* chapter, **policy can turn good behaviour into normal behaviour**.

When different sectors are working together to formulate solutions and incorporate stakeholder advice and recommendations into decisions to the maximum extent possible, then shared ownership and more effective, long-term outcomes are possible.



Before reading on, think: How could organizations from different sectors be engaged and with what purpose?

Private and civic sector

Organisations can act as multipliers when allowing people to come up with new ideas, offer testing opportunities and co-design solutions. Employee-led initiatives can act as powerful drivers of sustainability change within organisations. Such initiatives often begin informally, for example through internal reuse systems, repair activities, or waste reduction efforts initiated by staff. When supported by management, these initiatives can influence procurement rules, asset management, and organisational culture.

Many sustainability breakthroughs start with small groups of people making decisions, before policy catches up.

Examples:

- Food-sharing networks:
 - [Foodsharing Europe](#) ,
 - [FoodLoop](#) , Estonia.
- Neighborhood composting initiatives:
 - Community [composting in Brussels](#) .
- Tourism service providers are trained in separate waste collection and communicating sustainable practices ([Krk's journey to zero waste](#) , page 13).
- Including reuse criteria in procurement processes.
- Studies with recommendations how to shift from using 'Use By' to 'Best Before' when possible ([WRAP report](#) .

Awareness-raising and engagement are not substitutes for policy, they are **preconditions** for ambitious policy. Therefore, it is critical for anyone who wants to introduce a new policy measure to write the engagement plan which indicates the levels of engagement with the selected target groups. If you are a zero waste mentor for municipalities then make sure that creation of zero waste plan is an open, participatory process where all stakeholders can meaningfully engage. Keep in mind that the process should not be just a single event but a continuous journey. The [OECD Guidelines for Citizen Participation Process](#)  gives some ideas for that. The strength of the plans and actions that will outline the municipality's journey towards zero waste will only increase if a broad range of groups have had the opportunity to share their ideas and expertise into this process.

You can read more from the [Guide to Zero Waste Municipalities](#) .



Well-designed activities with right level of engagement:

- build public mandate for sustainability policies,
- help policymakers justify bold decisions,
- create social norms that make policy enforcement easier.

Examples of engagement between different sectors:

- “Waste not, Want not” project [resource hub](#)  designed to equip educators and students with the knowledge and tools needed to combat the dual threats of food and plastic waste. Participating organisations are from the Czech Republic, Austria, Slovenia, Germany, Slovakia, Bulgaria.
- Co-design waste prevention guidelines for public events and businesses: Estonian national guide for [organizing environmentally friendly events](#) .
- [Participatory budgeting](#)  – practiced in many cities all over the world.
- Involving academia in prevention pilots – CARE project Circular Households (2024-2027), where academia works closely with municipalities to design and test waste prevention solutions. Tampere University leads a work package on refining interventions targeting food and clothing consumption, while Lund University implements and evaluates pilot programmes to reduce food waste and promote circular food consumption. Local municipalities play a key role by using the generated data and insights to inform decision-making and shape policies. More information [here](#) .

UNDERSTANDING NIMBY (NOT IN MY BACK YARD)

Sometimes people are not just indifferent to our sustainability efforts, but quite actively against them. In some cases this is the NIMBY phenomenon.

NIMBY (acronym of Not in My Backyard) – local resistance to proposed infrastructure that is perceived as detrimental by residents – can also affect the development of sustainability and circular economy infrastructure.



Before reading on, think:

Have you had any personal experience with this phenomenon? Have there been any cases of NIMBY in your neighbourhood or in your country?

How have these situations ended?

Why do you think NIMBY happens?

The local reactions which are the basis of NIMBY are frequently framed as irrational, but they usually reflect concerns about health, environmental risks, lack of trust, or exclusion from early decision-making.

Good practice for addressing NIMBY dynamics includes early engagement, transparency about alternatives, involving residents in design and monitoring, and clearly communicating local benefits.

Developers and local stakeholders must communicate early and clearly about what they're planning, and how the project will affect the environment, landscape and socioeconomic changes and how the local population is involved in decision-making processes.

A useful **example** is this [10-minute video](#)  on renewable energy and public participation in the Nordic countries, which illustrates how early engagement can support acceptance of transition infrastructure.

NIMBY, as a form of social resistance and public non-acceptance, is common in transition processes and often appear as public counter-communication. This resistance usually comes from practical concerns, differing perceptions, and a lack of skills or supportive conditions, especially when change is seen as threatening. In local developments, it is important to also address aspects that relate to people's emotional connection to their local area, such as how projects (e.g. wind farms) can bring economic benefits and support the vitality of the local community.²

² Vihalemm, T., Keller, M., Kiisel, M. (2024). *Guidebook for Aligning Practices and Steering Multi-System Change: From Intervention to Social Change II*. Routledge.

GREENWASHING VERSUS GENUINE ENGAGEMENT



Before reading on, think: What examples do you know where engagement has turned into greenwashing?

Not all awareness-raising activities represent genuine engagement. Greenwashing typically focuses on image and messaging without changing decision-making structures or practices. Genuine engagement, in contrast, redistributes influence, allows feedback to shape outcomes, and supports long-term systemic change.

Examples:

- The municipality creates a council to tackle waste management challenges, invites all, even typical opponents, into it to monitor a project, buying itself legitimacy and public credibility. But then the municipality just disregards whatever the council suggests. The council exists formally, but decisions are made elsewhere and do not involve the council. To outsiders, it appears that there was broad consensus.
- [Citizenwashing](#)  – the greenwashing of democracy: Citizens' Convention on Climate in France was launched to respond to public demands for more participation and stronger climate policy. A randomly selected citizens' assembly proposed measures to cut emissions by 40% by 2030, with a government pledge to act. However, many proposals were vetoed, diluted, or only partly implemented. Despite a well-run process, weak political follow-up turned the initiative into a case of "citizenwashing," damaging trust and democratic legitimacy.

*Engagement isn't a one-time event or a tick-box in a project grant application.
Real change happens, when people truly feel like they are part of the process
and solutions.*

Closing questions for the reader to reflect upon:

- Which parts in this chapter were most confusing or difficult for you to understand? What do you think made them challenging?
- What resistance are you encountering, and what unmet needs might it reflect?
- Who are your main partners in zero waste initiatives and what is the level of their participation (inform, consult, engage, partner)?
- How can people move from being an audience to becoming co-owners of zero waste solutions?
- What do you want to take with you from this chapter?
- What do you want to know more about?

THE ROLE OF MENTORING IN THE ZERO WASTE JOURNEY

Authors: Kaisa Karjalainen and Jack McQuibban

Opening questions for the reader before reading:

- What do you want to know most about zero waste mentoring?
- What do you think is the most common issue a city or business struggles with when transitioning to zero waste?
- What benefits can an external person bring to the zero waste transformation of a city or business?
- What kind of competences do you think are the most valuable in a zero waste mentor?

WHY DO CITIES AND BUSINESSES NEED EXTERNAL HELP?

Embarking on a zero waste transformation is a significant undertaking that most cities and businesses cannot navigate effectively without dedicated support over a long period of time. Several common challenges make getting help from an external expert not just beneficial, but essential:

- **Human resource constraints:** Many organizations lack the internal capacity to focus on zero waste alongside existing responsibilities. Especially in smaller organizations, the person with relevant expertise or interest often has an entirely different primary role, making zero waste an additional burden rather than a priority. In addition to lack of time, many people lack the knowledge, confidence, and practical experience in zero waste implementation to drive forward progress in their city/business. In which case, having someone with experience will reduce the fear of making a mistake and help find the most efficient actions faster.
- **A rapidly evolving field:** The pace at which the circular economy is evolving presents a further challenge. New policies, technologies, and approaches are emerging constantly, and it is unrealistic to expect cities or businesses to keep up with these developments while simultaneously managing their day-to-day operations. Important advances can easily be missed, leaving organisations working with outdated knowledge or falling for greenwashing, leading to suboptimal results and repeating old mistakes. Having the support of an accredited expert here, to summarise the most relevant recent developments is a crucial help for over-worked, short-of-time officials.
- **Benchmarking and technical expertise:** Benchmarking is another area where organisations frequently struggle. Yet, being inspired by real-life examples is a very powerful motivator for action. Identifying what other cities and businesses are doing, especially relevant context regionally, knowing where to look for relevant examples, and having the expertise to evaluate their applicability all require time and knowledge that most organisations do not have readily available. A good mentor can give relevant examples, find the right case studies and sometimes even make the connections to the local changemakers on the ground to have an exchange of experiences.
- **Opportunity and information overload:** Information overload is a real challenge in most organizations and keeping up with the news is time consuming. At the same time, zero waste currently has a multitude of opportunities for learning, funding, showcasing the work and partnerships. An external person who specializes in making zero waste transitions a reality for different organizations usually knows which conferences, learning opportunities, and funding calls are coming up and which networks to belong to. They can also recommend the city or business as a speaker for an event to share their results.

All in all, a good mentor should take away the guesswork, can bring supporting materials and make relevant connections. The goal is to make the zero waste transformation of a business or city as efficient and smooth as possible, by providing clear benefits and actionable steps for officials to take.

MENTORS IN THE CERTIFICATION SYSTEM

To address these challenges, each city or business entering the [Mission Zero Academy](#)  certification system is assigned a dedicated mentor. They act as the local guide on the zero waste journey, helping to find the best possible solutions for the partner and navigate the maze of options and challenges which inevitably appear along the way.

These professionals are expected to be well-rounded, possessing not only a strong grasp of zero waste principles but also the interpersonal and analytical skills needed to motivate and educate stakeholders at every stage.

Core competencies of a mentor

Before diving into the competence list below, think from the point of view of a city or business:

What kind of person would be the most valuable support for their zero waste journey? How does the list match your view?

- Thorough understanding of zero waste principles and policies, including the ability to clearly explain what zero waste is and what it is not
- In-depth knowledge of the certification system
- Ability to interpret the criteria and processes across a variety of different contexts
- Ability to evaluate the relevance of provided evidence for the certification audit
- Ability to guide cities and/or businesses through the preparation phase to ensure a smooth audit and successful certification outcome
- Ability to recognize zero waste misconceptions
- Ability to build the knowledge and capabilities of the city and/or business being supported
- Ability to source relevant European and international case studies and benchmarks and support the person leading a zero waste journey in a city and/or business
- Understanding of the importance of social skills, communication, and the need to build a good relationship with a city or business to guide them effectively on their zero waste journey
- Knowledge of the local and national contexts, relevant cultural factors and the waste and environmental legal framework each partner is working in

Why do you think these competencies are deemed important?

A good mentor is more of a well-connected facilitator and solution provider than someone who knows every detail of a very niche topic. However, most mentors do have more detailed technical knowledge of certain sectors or topics. Since the certification systems are European wide, another important task for the mentor is to help translate the system into the country and location in question. It does not mean an actual language translation but the interpretation of things and how to implement them. Good mentors take into consideration the local and national legal frameworks, existing available solutions and other

aspects which make the zero waste journey of a city or business personalized to their needs – while still connected to the European and global network. It is about taking a European framework and tailoring it to the specific needs and people within the partner city or business.

The power of the network

Mentors are not expected to be “walking encyclopedias.” Instead, they tap into the collective knowledge of the Mission Zero Academy mentor community for specialized expertise and benchmarking. This community is nurtured through in-person meetings, online gatherings, and dedicated collaboration tools, ensuring no mentor – especially those working alone in their country – is without a support network.

COMMON TASKS OF A MENTOR



Before reading on, think: What would be the main tasks of a mentor?

Certain elements of mentoring support are always included as a baseline for every city or business. This includes support interpreting the certification criteria and how to comply with them within the specific context of the city or business, as well as guidance on using the available tools and templates. Mentors also provide ongoing guidance on the zero waste journey and next steps, connect organisations with relevant European or national opportunities, and support them in sourcing appropriate benchmarks. In practice, this guidance may include recommendations for action, advice on implementation, support in overcoming bottlenecks, and strategies for building internal support within the city or business.

Additional support can be provided per agreement, depending on the needs of the organisation. This may include facilitation of specific components within the zero waste strategy of each city or business – such as baseline assessments, strategy development, community engagement, and training, as well as technical advice on the best courses of action. In some cases, mentors may also participate in or even chair the organisation’s zero waste advisory board.

Beyond the standard scope, extra support can be arranged where needed. The mentoring hours included in the annual package are intentionally kept minimal, so as not to impose unnecessary assistance or increase costs where they are not required. As a result, it is common for additional mentoring packages to be agreed upon as and when the need arises. These negotiations typically take place in the autumn of the preceding year, when cities and businesses are developing their budgets for the following period. Extra support generally takes the form of more in-depth technical advice on any aspect of zero waste, more thorough facilitation of ongoing work, or dedicated training sessions tailored to the organisation’s specific needs.

TROUBLESHOOTING COMMON CHALLENGES



Before reading on, think: What are the main challenges that a mentor usually faces?

Navigating the path to zero waste is rarely a linear process, and both mentors and partner organisations will inevitably encounter friction points that can stall momentum. For the municipality or business, the most persistent hurdle is often **political instability or organizational shifts**. A change in local leadership or a departmental reshuffle can lead to a sudden loss of political will or the “deprioritization” of zero waste initiatives. You often find you are starting from scratch in building the relationship and knowledge of a new city official.

This is frequently compounded by a chronic **lack of time**; staff members are often stretched thin, treating zero waste as a “side project” rather than a core operational pillar. When troubleshooting these issues, mentors must act as stabilizers, helping the organization reintegrate zero waste goals into the new political or logistical reality without losing the progress already made. One important way a mentor can help in these changes is by finding ways to get the new leadership onboard the work, be it by finding the most suitable arguments, mapping relevant benefits for the new leadership, hosting a training session or bringing in the right kind of examples that you know will motivate the city or business.

Example:

After municipal elections in a city, the mentor first helped the technician prepare an internal presentation for the new political leadership about the certification process, progress so far and the next steps. This meeting raised some initial questions which were addressed in the follow-up meeting where the mentor was also present to answer them with examples from cities elsewhere who had previously similar doubts. The new leadership was also invited to the zero waste advisory board meeting to hear and discuss with the key stakeholders. By creating this feeling of buy-in and belonging to a network, it has been possible to alleviate concerns.

On the other side of the partnership, mentors themselves face specific pitfalls that can undermine the certification process. One of the most common issues is a failure in time management and record-keeping, as well as doing the work on behalf of the city or business instead of guiding them to do it. The general mentoring hours are very quickly depleted if the mentor takes on the work of the customer. It will also lead to them not learning how to do the work independently in the future. If a certain task is outsourced to the mentor outside of the general mentoring package, then these roles can shift.

Read the example below. Why do you think the approach of the mentor is not an ideal one?

A mentor takes on the task to completely write the zero waste strategy for a city instead of facilitating and guiding its creation.

It is important to remember that the mentor is not a staff member or secretary of the city or business but rather like a coach. Consequently, it is important that the city or business owns their zero waste journey and are able to conduct it also when the mentor is not there. Therefore, it is crucial that the mentor lets the organization do the work by themselves and only gives guidance and support.

In addition, a common challenge mentors face is lack of skills managing the human side of the work. Facts and numbers are great but it has been proven time and again that we need more than hard facts to change things most of the time. Therefore, paying attention to people, their motivations, and their concerns is of utmost importance. You can read more about motivation support from the *Learning Motivation* chapter of the Trainer Handbook. Completing the Trainer's (Trainer for Sustainability Curriculum) programme gives an even more thorough dive into the topic.

Equally important is to keep the momentum. Therefore, keeping in touch with the city or business and regularly reaching out if it seems like progress has halted is a good practice. This is not to be seen as chasing money or putting pressure on a city or business, but to simply remind them of your supportive role and availability.



Before reading on, think about the following questions:

What would be your superpower as a mentor?

What skill do you think you need to develop?

MENTOR TRAINING AND DEVELOPMENT

All mentors begin their journey with an online accreditation programme lasting between 12 and 16 weeks. This initial programme equips mentors with the foundational skills needed to navigate the certification system, provide information to prospective customers, and confidently present the certification to them.

Following the online course, mentors undertake a period of independent learning to deepen their understanding of the system in greater detail. Upon completing this stage, mentors are invited to attend an in-person training event where they have the opportunity to work through real-life cases, engage more closely with experienced mentor-trainers, and strengthen their connections within the mentor community. Successfully completing the in-person training leads to competence certification, formally verifying that the mentor possesses the skills and knowledge required to carry out the role.

Once a mentor has gained sufficient experience as a Junior Mentor and consequently reached the Pro Mentor level, they have the option to pursue auditor accreditation, should they wish to do so. The mentor competence levels as well as further training opportunities are explained below.

Progressing skills and confidence in being a good mentor

Junior > Pro > Legend

Mentors are supported by Mission Zero Academy and the network at every stage of their development, and it is important to recognise that everyone starts from somewhere. All **Junior Mentors** receive additional support from Mission Zero Academy and the wider mentor community as they build their confidence and experience. Junior Mentors typically begin by working with more straightforward cities and businesses, allowing them to develop their skills in a structured and supportive environment.

As mentors progress, they move through different levels of experience and responsibility. The next phase, **Pro Mentors**, have already independently guided several organisations through the certification process and are fully equipped to work with regular customers on their own. At this stage, they are also well-positioned to pursue auditor training should they wish to do so.

At the highest level, **Legend Mentors** bring a wealth of experience to the role. They are typically also qualified auditors and are capable of independently managing even the most complex organisations. Beyond managing their own caseload, Legend Mentors play an important role in supporting the development of more Junior Mentors and actively contribute to improving the mentoring system and its tools.

In addition to the mandatory accreditation training, Mission Zero Academy and Zero Waste Europe are committed to providing mentors with ongoing opportunities to further develop their skills. This includes topic-specific training in areas such as reuse or biowaste management, as well as broader professional development in areas such as facilitation and training skills. Where possible, mentors are also invited to participate in study tours and in-person workshops to continue expanding their knowledge and expertise. In turn, they are expected to use these opportunities to foster new relationships with potential future partner cities and businesses.

At the core of the support system, there is a competence matrix for each of the levels and then the methods to reach them. This support starts already before even embarking on a training to become a mentor as there are courses from the beginner level for enthusiastic zero waste practitioners and from there, a complete learning journey which leads to becoming a mentor.



"A good mentor not only shares knowledge but also listens and seeks solutions tailored to each city or business. Through trust and collaboration, they build strong relationships to move towards zero waste."

*Alba Cabrera,
Mentor and Auditor for Zero Waste Cities and Business Certifications*

FREQUENTLY ASKED QUESTIONS

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

1. Can the mentor and auditor be the same person?
2. Who can be a mentor?
3. Can a city or business become certified without a mentor?

1. Can the mentor and auditor be the same person?

The same person can hold the mentor and auditor qualifications but they can never audit an organization whose mentor they or their colleague has been. A good mentor usually makes a good auditor because they can bring a wealth of experience to the organization they are auditing.

2. Who can be a mentor?

Any individual who holds a suitable background for the work, aligns with the values of zero waste and has gone through the mentor accreditation training. To ensure that the accredited mentors have sufficient possibilities to do the actual mentoring, the training programmes are only organized when there is demand for new mentors in a region.

3. Can a city or business become certified without a mentor?

Theoretically yes, but it might require extra efforts and lead more easily to deviations in the audit which then need to be corrected. For each case, Mission Zero Academy should be consulted.

Closing questions for the reader to reflect upon:

- Which parts in this chapter were most confusing or difficult for you to understand? What do you think made them challenging?
- How can a mentor help move an organization from just being interested in zero waste solutions to implementing them?
- Which mentor level (Junior, Pro, Legend) best aligns with your current experience, and what skills do you hope to develop next?
- What resistance have you encountered in your work with cities and/or businesses and how did you tackle it? How would you tackle similar resistance now?
- What do you want to take with you from this chapter?
- What do you want to know more about?



SUPPORT AND RESOURCES FROM ZERO WASTE EUROPE AND MISSION ZERO ACADEMY

Authors: Jack McQuibban and Kaisa Karjalainen

Opening questions for the reader before reading:

- As a mentor, what kinds of activities could be done that would best support a municipal officer to implement better zero waste solutions?
- As a municipal officer, what is the best way to receive new information and guidance?
- In a society full of information overload, how can clear guidance and support be made easily accessible to our target audience?
- When was the last time you found something online that you read/watched/listened to and it genuinely changed your habits or behaviour? What was the driving force behind this change?

This chapter is made up of three parts:

- Zero Waste Europe's (ZWE) and Mission Zero Academy's (MiZA) role as supporting actors;
- The support available to European municipalities;
- What's to come and how we can improve.

OUR ROLE AS A SUPPORTING ACTOR

As has been mentioned throughout this handbook, there is growing interest in zero waste principles and their implementation at the local level worldwide, but especially in Europe. Since the launch of the Zero Waste Cities programme in 2007, the scale of the number of municipalities implementing zero waste solutions has increased dramatically. In 2026, approximately 20 million Europeans lived in municipalities partnered with ZWE and MiZA that were implementing either a holistic zero waste strategy or specific waste-stream solutions. This rises to more than 10-15% of the EU population, if you include circular policies being supported by groups such as [ICLEI](#) and others.

With growing interest in the topic, and clearer evidence of the benefits of implementing a zero waste approach, this brings with it new challenges – specifically, a growing demand for support on how to do the right thing. Zero waste does ultimately challenge and seek to **change the status quo of today's common waste management system**. By its nature, this is neither easy nor achieved overnight. It requires **sustained attention** and support, otherwise we risk having a backlash effect – where zero waste is stated as a big solution but in reality fails to deliver much, resulting in politicians and communities believing less and less in these policies.

Practice has proven that city officials increasingly **lack the time and capacity** to work on zero waste. The **economic challenges** and shifts in **political priorities** have made the matter even worse. Outside of the big cities with the largest budgets, normally city officials have to manage multiple responsibilities within an environmental portfolio (e.g. water, waste, green spaces, etc) or could also be holding multiple portfolios (environmental, local business support, mobility, etc). Therefore, **effective support** for city officials is based on relevant information being shared clearly and in a timely manner (e.g. at the right moment and in the right format).

When you are looking to provide support for a city official, the end outcome should be that any guidance or assisting event/document achieves the following:

- Helps **build confidence** in the local authorities so that they can successfully advocate for changes within the city administration. The building blocks of confidence include, for example, increased knowledge, impact data (for example, waste reduction results, shifted costs or improved separate collection rates), real-life stories and connections to experts and like-minded people.
- Clarifies and helps **explain complex and interconnected topics** within waste management and circular economy while taking into consideration the **local context**.
- Provides suggestions for **practical actions** which are relevant in the local context and backed by **data and technical robustness**. The benefits to the local community are clear and the actions are concrete and added to a timeline.



Based on your experience, what kind of concrete actions could deliver the goals listed above?

FROM INTEREST TO EXPERT – DIFFERENT SUPPORT AT DIFFERENT STAGES

Together, ZWE and MiZA have formally structured the way that we, with mentors and member organisations, provide support to the growing range of cities we work with. As a collective, we work with municipalities ranging from those who have an initial interest in the topic to those who are Europe's best performing local authorities, seeking to excel even further. Therefore to cover this broad scope, based on what we most commonly see in our work with municipalities, we have structured the support offer for the different stages of engagement.

For Zero Waste City and Business Mentors, it is critical to understand this structure, because it will help them understand where the organisations are in their zero waste journey. We ultimately want as many cities and businesses as possible moving up the pathway towards excellence, and to achieve that, we need to understand what each stage consists of for them and what the benefits are for moving up from their current stage. From an organisation's perspective, it is important that the resources at each stage match its needs and are tailored to its context. In a world full of information, a personalized offer is key.

We have identified **six different stages/phases for supporting cities and businesses**. At each stage, a different level of support, and subsequently a different level of access, are required to ensure we best deliver quality services and guidance. These include:

Stage 0 – First introduction

- This stage is the first entry point. The city or business first hears about what ZWE and MiZA do and this sparks an interest in how things could be improved in their local community.

Stage 1 – General interest

- A city or business begins learning more about the services on offer, and they're exploring what specific support or services ZWE and MiZA offer that could help their work and wider community (e.g. attending public webinars or reading through certain documents). This includes general awareness-raising activities from the Zero Waste Mentors to a wide pool of potential municipal partners.

Stage 2 – Specific interest

- A city or business has identified the specific priorities, potential new policies and support required to help improve their waste system. At this stage, the support provided becomes much more tailored and more time is therefore required to prepare and deliver this work both from the organisation itself and the expert who provides guidance.

Stage 3 – Partnership & Learning

- A city or business is formally in partnership with ZWE (e.g. via its dedicated projects) or MiZA (e.g. via its services or the certification). This comes via a formal written agreement and it is designed to accelerate work and impact in a specific area of interest e.g. textiles, packaging, Pay-As-You-Throw, etc. The mentor's role here is to help advertise such opportunities and have a good knowledge of the benefits of engaging in such projects or services.

Stage 4 – Performance & Monitoring

- A city or business has committed to the holistic Zero Waste Certification and is now receiving dedicated expert support to improve their policies/processes across the entire organisation, working towards progress across the wider waste system. Mentors here need to confidently be able to explain how moving from a specific topic collaboration to the broader certification can bring them greater benefits, and the ease/simplicity of doing this based on their previous work.

Stage 5 – Top of the class

- A city or business has undergone multiple certification audits to become one of the top performing organisations in Europe, providing support and inspiration to others across the continent. Zero Waste Mentors should be able to confidently explain why municipalities and businesses should be aiming for this “top of the class” status and the benefits it brings.

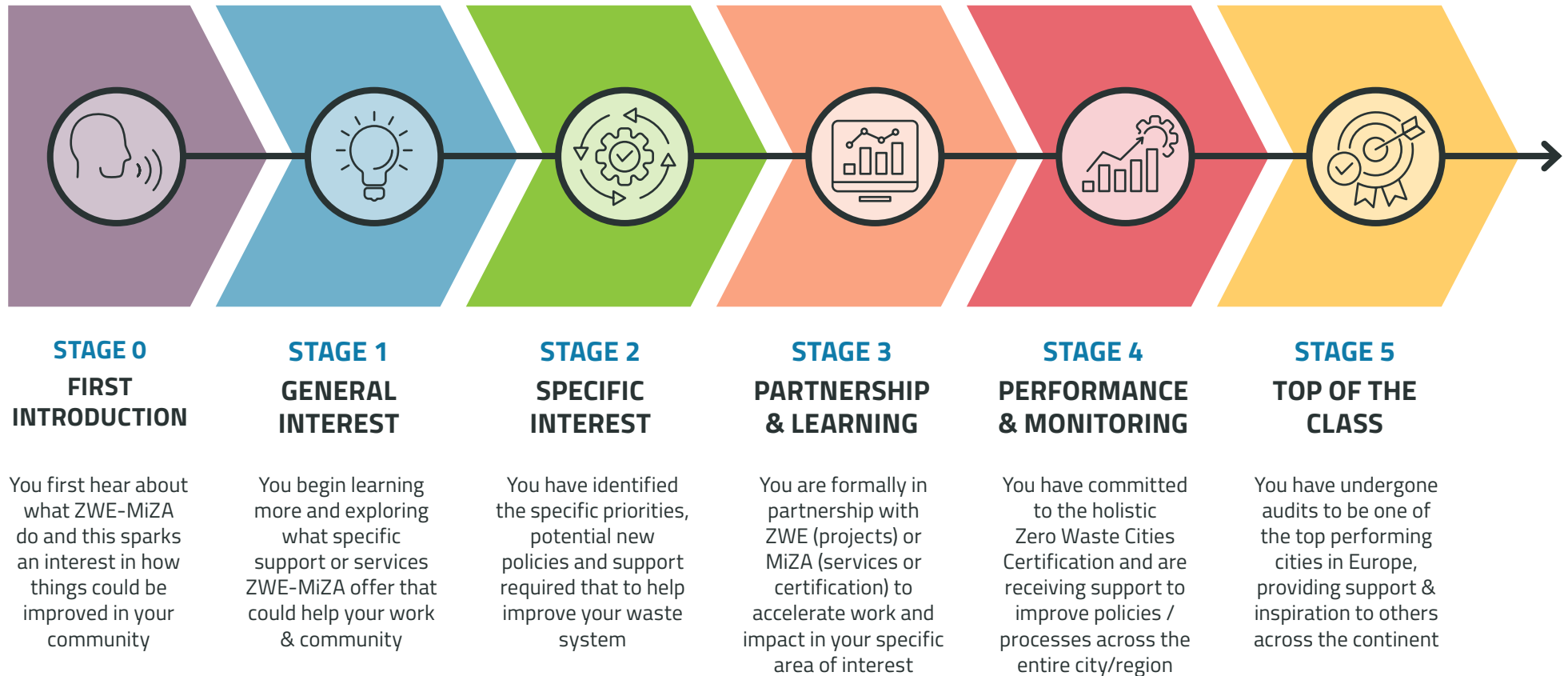


**How would you identify municipalities and businesses in each of these stages?
Where would your own municipality or business be and why?**

As municipalities and businesses progress towards Stage 5, they receive a greater number of benefits from the support we provide. These range from:

- Priority access to funding opportunities and project collaborations which ZWE and MiZA create or get invited to;
- Free or discounted event tickets that come through to ZWE and MiZA, as well as to our own organised events such as Study Tours;
- All of the certification's package of supporting tools and access to expert mentoring;
- Greater number of opportunities to speak at online or in-person events to showcase their work;
- Access to technical documents and guidance provided only within certain projects or services;
- Free or discounted and priority access to a growing number of networking events, mostly in-person but also online, to connect with other city officials, businesses and funders;
- Access to closed online calls and workshops to delve deeper into certain topics and hear from experts and the local practitioners behind specific best practices.

The pathway to progress



How we support cities – from showing an initial interest to implementing best practice models

Zero Waste Europe (ZWE) and the Mission Zero Academy (MiZA)

THE SUPPORT AVAILABLE TO EUROPEAN MUNICIPALITIES

Resources for municipalities on ZWE's Zero Waste Cities hub

Over the last decade or so, together with its network of members and partners, ZWE has built a substantial and varied suite of resources which we hope are made to help municipalities design, implement, and improve local zero waste strategies. The available resources range from practical guides and learning materials, case studies, webinars, in-person events and blog content. Ad hoc workshops can also be organised with either the ZWE or MiZA team, depending on the needs of the local authority requesting such a session.

In addition, MiZA has an online learning platform and offers hybrid training formats which cover a growing variety of topics and accommodate participants with different prior knowledge. It will allow both municipality officers as well as local change makers to grow their skills, network with like-minded people and get connected with experts. The learning journeys cover both general zero waste as well as more detailed topics. In addition, tailored training can be designed to tackle specific needs.

Free practical guides and tools



The most immediately actionable resources for municipalities sit in [ZWE's library of downloadable resources](#) . These cover a broad range of topics, in various formats. For example, it includes [a guide on the best-performing methods for separately collecting organic waste](#) , as well as the ["Measuring Up" manual](#) , ZWE's first municipal manual specifically focused on circular textile systems. The library should be a regular go-to resource bank for mentors and city officials, as it is updated regularly and covers relevant topics from incineration to packaging reuse and reducing toxic exposure via food contact materials.

For municipalities **just beginning their journey**, available resources include:

- A guide ["Starting scenarios to become a Zero Waste City"](#)  which offers three common entry points to zero waste strategies tailored to different contexts.
- [A guide on how to create a Zero Waste Municipality programme that walks local authorities](#)  through some initial practical planning processes and steps.
- [A further guide on creating a methodology for Zero Waste Municipalities](#) , aimed at helping cities build a consistent and measurable framework that goes into greater detail on implementing zero waste strategies.

For cities grappling with how to **fulfill and comply with EU legislation**, available resources include:

- [A local guidance document on implementing the single-use plastics directive](#)  that helps authorities translate EU rules into on-the-ground action.
- A guide ["Putting second-hand first"](#)  that focuses on how municipalities can support local job creation through second-hand and reuse initiatives.

- [A guide on reducing food waste at the local level](#)  that showcases different roles and initiatives municipalities can take to improve how food waste is prevented and managed.

Project based resources

As mentioned above, both ZWE and MiZA regularly participate in large European-wide projects. Many of these produce publications or organise events which are free to access and showcase either new research or provide helpful new guidance tools for mentors. For example, projects provide expert resources on the following topics:

- [Plastic waste prevention in public events, procurement & buildings](#) 
- [Best practice organic waste management and treatment models locally](#) 
- [Takeaway packaging reuse systems](#) 
- [Textile waste management and prevention within cities](#) 



In your opinion what kind of role do materials like these play in making zero waste change happen? What more is needed?

Learning and training materials

Beyond operational guides, ZWE offers a set of three interconnected learning materials specifically designed to build capacity within municipalities and communities. These (including this handbook) have been developed in the BEZWA1 and BEZWA2 Erasmus+ projects.

There is a growing offer of [training programmes](#)  and courses to meet learners at any level of existing knowledge and together they form a structured educational pathway. For example, The Trainer for Sustainability Curriculum is oriented toward professionals who will deliver zero waste training programmes, while the Zero Waste Basics Curriculum targets community-level advocates who can drive grassroots engagement. In addition, several topical and more holistic courses build capacities to advance zero waste from different angles. These materials are designed so that knowledge gained can ripple outward — from municipal staff to local organisations and citizens.

Reports and case studies

For municipalities seeking inspiration and evidence from peers, ZWE publishes regular reports and case studies documenting progress across European cities. These are the best 'go-to' places for in-depth data and knowledge on how some of Europe's best practices were achieved. Numerous case studies are available to read and download, often in multiple languages (more can be added if ZWE receives a request for a certain translation). Good examples include:

- [Tübingen's single-use packaging city tax](#) 
- [Separate collection of bio-waste in Partizanske](#) 
- [The island of Krk's journey to Zero Waste Certification](#) 



Furthermore, the ongoing editions of the [“State of Zero Waste Municipalities” report](#) ^[7], which presents stories of cities across Europe that are driving transformation in how they manage resources. There have been multiple editions of these reports and they each serve both as an overview of all of the work happening in Europe with Zero Waste Cities and also as repositories of transferable lessons from best practices – with different themes tackled in each edition.

Events (online and in-person)



Think about a recent professional event you attended, what was your biggest takeaway from it? Why was it meaningful?

The organisation of ongoing learning and networking opportunities is a key cornerstone of the support we offer to businesses, municipalities and waste companies. For example, **study tours** to best practices have proved time and time again to be effective learning moments – based on a core principle of ‘seeing is believing’ where you can speak directly and see with your own eyes how Europe’s best performing systems work. For example, [ZWE organised a study tour in early 2026 in Denmark](#) ^[7], looking at packaging reuse systems in Copenhagen and Aarhus. MiZA organised a [study tour in spring 2026](#) ^[7] specifically for municipalities from the Balearic islands (Spain) and Portugal where they visited the best practice region of Sardinia.

ZWE regularly also hosts free-to-access **online events** and webinars on a range of topics designed to be specifically relevant and helpful to municipalities. Examples from 2026 include sessions on the potential for [Extended Producer Responsibility \(EPR\) for food waste](#) ^[7] and [the policy measures needed within textiles EPR schemes in the EU](#) ^[7] that support social enterprises who do most of the collection and sorting of textiles today. As mentioned above, closed online calls that are shared only with cities in a formal partnership with ZWE and MiZA are organised frequently throughout the year. These go into more detail regarding technical topics than the publicly available webinars do, with the aim of really providing clear, tangible guidance for some of the most complex, stubborn challenges facing local authorities and companies regarding implementing zero waste measures today. The best way to hear about any upcoming events is by signing up to the newsletters or checking out the websites.

Blog posts and the newsletter

Both ZWE and MiZA operate a blog section that regularly publishes posts, written by staff and external partners, which focus on numerous topics that will be particularly relevant for both mentors and local authorities and businesses. A lot of inspiration and good ideas can be taken from these shorter format blog posts, [such as this overview of Sardinia’s reward and penalty scheme](#) ^[7] for municipalities on the island – helping the region achieve a separate collection rate above 70% despite receiving high levels of tourism every summer. Blog posts often also summarise key findings from events that are organised, [such as the Slovakian Zero Waste Cities conference](#) ^[7].

Lastly, [the ZWE newsletter subscription](#)  allows municipalities and practitioners to stay informed of new resources and developments as they are published. For any first engagement with a local authority, this is what should be suggested as a next step / follow up by all mentors at the very least.



Closing questions for the reader to reflect upon:

- What is missing from this chapter and more broadly, the support provided by ZWE-MiZA? How could this be strengthened?
- How do you see your own contribution to helping cities and businesses advancing on the stages?
- What triggers and roadblocks can you imagine which helps or stops progress on the stages? What can you do to tackle them?



TRAINING VIDEO GUIDE FOR ZERO WASTE PRACTITIONERS



This seven-minute [training video](#)  demonstrates how a zero waste practitioner might approach a municipal officer – or any other stakeholder. It can be used as a training tool to discuss how to best get stakeholders interested in zero waste.

In reality, such meetings are often longer and more time could be taken to explore different topics in greater depth, however in this video we have tried to capture the essence of a good communication about zero waste.

Example exercise – suitable both for individual practice and for use in a training session.

The practice case:

You want to get your municipality to adopt some zero waste policies, firstly door-to-door collection. You know that they have only public recycling points, where people must bring their source separated waste. You have set up the meeting with the vice-mayor with the promise that your ideas could help to save some costs. How would you approach them to get them to consider your ideas?

Extra-layer: As you enter a meeting with the vice-mayor, you see that the secretary brings in coffee in single-use cups.

1. If you are doing a training:

- A.** Learners work in pairs and role-play the scenario: one is vice-mayor, the other is the zero waste practitioner OR ,learners work in pairs, where they simply discuss what their approach would be OR
- B.** Individual work, where learners write down their thoughts, which is then followed by discussion in smaller groups or in one big group.

If you practice yourself:

Write down your thoughts, so you can use them when discussing the topic with others.

2. After the first task, look at the video. If you are doing a training, then plan another discussion after you have shown the video. Possible guiding questions for you to ask yourself or give to your learning group:

- What did you notice in the video?
- What did the zero waste practitioner do differently in the video than you would have? What could be the reasons for that? What would work better in reality?
- What was done well? What could be done better?
- What principles of communication can we deduct from here?

- What would be the next steps for the zero waste practitioner after the meeting?

Some parts of the video can be looked at again, or the video paused at certain moments, for example when the badly sorted waste bins are shown.

The expert reasoning for the zero waste practitioner's approach in the video that you can use in the end:

- The practitioner resists the urge to start first talking about the single use cups on the table, which probably would shift the focus from the bigger plan she wanted to propose. She also doesn't go into blaming why their office is using single use cups. Blame is a form of control, which would suppress the mayor's need for autonomy, which in turn would reduce his wish to truly listen to the practitioner.
- The practitioner doesn't start with her proposals, she asks the vice-mayor what he thinks about the situation (even though she already knows some things and has her own opinions) and is sincerely interested in how it looks from his perspective. She accepts the answers calmly, without judging, but rather being supportive, building the dialogue upon the vice-mayor's thoughts - supporting the need of autonomy and relatedness.
- The practitioner mostly asks questions, encouraging the vice-mayor to arrive at conclusions independently - helping him to construct the knowledge himself, and again supporting autonomy.
- The practitioner also asks questions that need more in-depth answers than just yes or no, where the vice-mayor has to explain a bit more and open up his thinking.
- In moments when the vice-mayor seems a bit confused, because he probably hasn't asked these questions from himself and others from him, and takes time to respond, the practitioner is patient and not rushing in with her knowledge – this is again helping the vice-mayor to think actively about this himself.
- Only after several questions the practitioner starts presenting her case and examples of what could be done in their city too. By offering the vice-mayor options on how they could do things together, the practitioner supports his need for competence.
- The practitioner doesn't talk about the definition of zero waste, but shares the examples of what it means in practice for the zero waste cities. She focuses on the decisions the city governments have made, showing also how it has been a journey and making the connection how those cities were once in the similar state as this city is now.
- In the end, the practitioner also doesn't just say that single-use cups are bad, but asks why they are used (thus, giving a question, not an answer, with the potential to the vice-mayor to find the answer himself) and simply proposes a possibility to discuss some better options next time.

Anything else that you noticed?

Due to the short length of the video, the discussion progresses more quickly than it would in a real-life situation. How could the zero waste practitioner act differently in real life, following the same principles mentioned above?

ZERO WASTE CITY

ROLE PLAY GAME

The Zero Waste City role play game can be used as a wholesome final exercise in training for zero waste practitioners or as a separate simulation exercise. The focus on the role play game is on municipalities, but the same format can be also used with different organisation profiles (schools, restaurants, community centres etc). The game gives the learners a life-like yet safe environment for testing the level of their skills and understanding in providing zero waste solutions. The elements of the game are:

- The main aim of the activity is to give the learners a random municipality case, which may be quite different from their own situation, to test if they are able to apply zero waste principles in different contexts.
- The stakeholders are the most common ones that zero waste practitioners need to work with – municipality workers and waste company representatives.
- A disruption is built into the game, in order to practice adapting to changing circumstances which also often happen in real life.
- The final stakeholder in the game is a journalist, as communication and talking to the media is also part of spreading the zero waste message.

The game is played in groups and 3-4 people in a group is the ideal size for the learners. Groups could either be formed randomly or by learners themselves.

In addition to the role play game, more ideas on how to assess learners' zero waste competences can be found in the *Learning Assessment* chapter of the Trainer Handbook.

Here you will find:

- The general set up for the game;
- Assessment sheet for the trainers playing the stakeholders;
- Five municipality cases and two school cases, together with disruptions;
- The short descriptions of stakeholder personas;
- Short zero waste expert advice for all the cases

The descriptions are meant for the trainers playing the stakeholders. Additionally, some short background information can be created about the personas to give to the groups, for example in the form of a short biography or CV.

For those acting as the stakeholders, you will need experts with enough background in waste management, zero waste policies, and real-life situations (and ability to portray these personas with a sense of playfulness!). Besides the stakeholders, it's good to have a separate person to be the game host, who will keep the time, give instructions to groups and direct the stakeholders to the right group at the right time. It is recommended that each group gets to work in a different room, as several discussions happening simultaneously in the same room can disturb the groups.

Recommended timeframe for the game is around **4 to 4,5 hours** without breaks – these can be added where needed. Time for the groups to form is not included, but this can be done also the previous day or given as a task during lunch or some other option. If it's not possible to dedicate that much time for the game, then the stakeholder meetings can be a bit shorter and the journalist and/or one of the first stakeholders can be taken out from the game.

These elements should always stay in the game:

- the first meeting,
- disruption,
- meeting connected to the disruption.

They are the core pieces of the role play as a learning activity – how to introduce your idea and how to adapt to changes.

Timeframe of the role play game

Time	Activity
30 min	Municipality case is presented to groups, building their proposal(s)
15 min	Meeting with the first stakeholder
5 min	Break between the meetings, trainers playing stakeholder can make notes
15 min	Meeting with the second stakeholder
15-20 min	Teams analyse the info from their meetings, make plan for next steps
20 min	The disruption is presented. Teams have time to adjust their plan and get ready to present to the new stakeholder
15 min	Meeting with the new stakeholder
20 min	Making final plan (at the same time, trainers decide on the media angle for each group based on what solution they are proposing for the municipality)
15-20 min	Introducing media role to groups, time to prep for the interview with the journalist
5-10 min	1-2 team members are interviewed by the journalist persona
15 min	Private feedback session to each group with the trainer who played the journalist
60-90 min	All teams back together, reflections and feedback to each group (~10 min per group to share their own reflections), all experts giving their view and solutions



After receiving the municipality profile in the beginning, if groups are struggling, they can be guided to ask themselves questions like these:

- Highlight in text what you think are the most important facts, when making the decision.
- What information is not that important?
- What additional information do you need to ask from the municipality and waste management company?

Assessment sheet for the trainers

The objective for the trainers playing different stakeholders is to assess whether learners actually have the needed competences of zero waste practitioners. As it is challenging to do that while playing a character, we have put together a structured assessment sheet, which each trainer can easily fill in right after the stakeholder meeting with a group. Each trainer should have an assessment sheet for each meeting. Based on the general objectives of the training, these questions can be modified.

Example sheet

Group number:

Stakeholder round: 1 / 2 / 3 / 4

Trainer's name:

Zero waste topics:

- ☐ Did they mention the word "zero waste"?
- ☐ Did they mention/emphasize zero waste principles (waste reduction, reuse)?
- ☐ Did they mention EU waste objectives and/or targets?
- ☐ When talking about waste incineration, did they bring it up as an undesirable option?
- ☐ Was it clear what they wanted?
- ☐ Did they summarize their talk and offer a next step?

Team and behaviour:

- ☐ Did they introduce themselves?
- ☐ Did everyone get to talk and/or support each other when needed?
- ☐ Did everyone really show interest in me (not on the phone, etc.)?
- ☐ Did they listen to me and calmly wait for my answers?
- ☐ Did they ask open-ended questions?
- ☐ Did they offer solutions to my concerns?
- ☐ Did they immediately start with their solutions/plan, without asking my thoughts first?
- ☐ Did they provide additional explanations when needed if I didn't understand something?
- ☐ Were they polite?

What stood out positively:

Main mistakes:

Emotion after the meeting:

inspired

interested in meeting again

uninterested

disturbed

A **commented version** of one municipality profile can be found at the end of this chapter, which can be helpful to guide learners to read and interpret information given to them. At the end of each group information, we have also added short expert advice on what they would do in this situation. This information is meant for the trainers, to help them comment on the learner's work. The expert comments have a separate section regarding Zero Waste Certification, which can be added if the training had focused on introducing Certification.

Stakeholders' rotation

In our pilot training we had 4 groups and 4 trainers/experts. Each trainer met with each group once, in a different role. Depending on what role the learners play in real life, choose the most relevant stakeholder personas for their profile (the personas can be picked from any of the cases and/or adjusted if needed).

An example meeting plan with stakeholders for the groups:

	Round 1	Round 2		Round 3	Round 4
Group 1 (case 1)	Municipality rep – trainer 1	Waste company – trainer 3	Disruption	New operational officer at municipality – trainer 4	Journalist – trainer 2
Group 2 (case 2)	Municipality rep – trainer 2	Waste company – trainer 4		New waste company – trainer 1	Journalist – trainer 3
Group 3 (case 3)	Waste company – trainer 3	Municipality rep – trainer 1		Consultant to mayor in charge of overseeing budget cuts – trainer 2	Journalist – trainer 4
Group 4 (case 4)	Waste company – trainer 4	Municipality rep – trainer 2		City's waste management team – trainer 3	Journalist – trainer 1

Below we reference information for each group, so that the municipality profile, the disruption, and the stakeholder personas for one case can all be found together. **Pick and choose between the different groups (municipality profiles)** depending on what is most useful for the learners and the number of groups. The disruptions and stakeholder personas can also be adapted or mixed for specific learning needs, for example the stakeholders from school cases can be used with the municipality cases, if it fits more with the profile of the learners. The same way, municipality representative personas can be changed from operational officer to vice-mayor or mayor, if the learners themselves are municipality officers.

The **journalist persona** and their focus in the interview will largely be created based on what the groups have proposed to previous stakeholders – whether it will be a story for the local newspaper or of national interest. Therefore, for this role it's important to do a briefing with those previous stakeholder personas, to find the context and story angle. As for the general journalist persona, this description can be used.

Journalist



The ever-present pressure for truly newsworthy content drives your investigative focus and growing list of subject areas in which you feel confident. One of them is environmental management, but by itself it is rarely interesting enough to your editors, so you are on the lookout for exceptional circumstances.

To get the real story, you are not afraid to ask tough questions, drill for details and not be satisfied with handwavy answers or misdirection. You ask about the core idea, costs and sources of funding, roles and responsibilities, ownership and things that are done well or have gone wrong. Sometimes you haven't had your coffee yet and want interviewees to be as concise as possible.

When the game is played with learners, who in real life are from different backgrounds and not working for a municipality, it can be hard for them to find a common identity to portray in the game. The following description can be used for **the group to define themselves** (and introduce themselves to the stakeholders). In the case where learners are municipality officers, this persona can also be adjusted to a local activist, who has an opposing agenda and is against planned changes.

Local activist/consultant



You run a small business (could also be a sustainability consultation firm), but more importantly than that, you care deeply about your local community and space. Helping organize events, volunteering with an environmental association, proposing and responding to development suggestions of politics de jour. Having heard about the zero waste concept, you wish to guide the municipality to adopt targets and implement measures to get it truly on the zero waste path. You know where to get expert assistance, (if appropriate for the game, including for the Zero Waste City Certification, what traps to avoid, how to build a local movement and have no problems with defending your ideas publically.

CASE 1

Municipality profile

- The municipality is medium-sized (200,000 inhabitants) and is quite residential, with lots of high-rise buildings in densely populated areas and suburbs. Only 30% of the population have access to a garden.
- 200,000 inhabitants generate 550 kg of mixed waste per capita per year, which includes a lot of waste coming from local cafes and restaurants which is included as MSW.
- The average income of local residents is below that of the EU. Most residents' income comes from the tourism and hospitality sectors.
- Challenge of language diversity: there are often 5 different languages spoken by residents throughout the town.

- The municipality partners with the local private waste management company, which is responsible for implementing the waste treatment and separate collection systems. The municipality has an overall say and control over which company operates this programme, but the waste management company is realistically the only business who have the capacity and technical requirements to run this service within the local area.
- 35% separate collection rates in the municipality:
 - Glass: street container.
 - Door-to-door collection of mixed waste + paper and cardboard.
 - Plastic bottles and metals: street containers.
 - No separate collection of organics.
- An incineration plant is used for the vast majority of mixed waste and has a contract to run for the next 5 years. The incinerator services many towns and communities across the local region, charging high taxes due to there being little alternatives available for municipalities to manage their waste. The plant is 50 km away from the town, resulting in high transportation costs, too.
- There is one central drop-off location that citizens use for hazardous, bulky, garden, and organic food waste, which is currently 10 km outside of the town, with low usage rates of around 5-10% of the population).
- The municipality is interested in the possibility of introducing a PAYT scheme, with local businesses not opposed to the idea either, but no action has been taken yet due to a lack of capacity.
- Currently, residents pay a flat base rate of tax to the municipality for waste collection and management, which does not differ depending on the amount of waste they produce.
- One small and independent packaging-free shop has been established in the town within the last 12 months, but otherwise there remains little to no encouragement of reuse. There are no repair centres in the local area, although some businesses do offer the service but with a small fee.
- Educational posters have been spread around the town in the past to encourage the use of separate collection bins for residents and tourists, as well as some social media advertising paid by the municipality to encourage more young people to participate in separate collection and reuse activities.

Stakeholder personas

Municipality representative

You are responsible for the operational level of a municipality, including finances and project management. Being a medium-sized municipality, you need to handle many things at the same time – you hardly keep up with the overload of work and many responsibilities. You mainly deal with urgent things and don't leave much room for new things – such as innovative approaches like zero waste, although you think they might be useful for the municipality's development and better waste management. How to find capacity for this additional work and responsibility? You need to be approached by chance, not pushed, and provided with a simple plan of how and where to start without much support and expert knowledge. You desire the feeling of trust and reliability.



Waste management company owner



You are a person of obvious practical concerns: you are both stern, old school, and unfavourable to suggestions of soft and poorly defined measures. You think in people, trucks, tons, euros – not long-term visions and social innovations. It's all about waste management technology and performing the core services the company was founded for.

Disruption



Local elections were held and, although everyone assumed the same party would continue, surprisingly another party won and took office in city government. The new party is known for their conservative and business-as-usual mindset. They appoint a new operational officer (covering also waste topics), who finds zero waste an utopian idea (and probably just doesn't know anything about it). Your next meeting is with them.

Stakeholder persona after the disruption

New operational officer for the municipality



You are self-confident. You know some basics about waste management, but lack the big picture and do not know the local situation. You are in favour of ready-made solutions: you are willing to build facilities that will take care of the waste, rather than modifying the separate collection system. Three jobs generated by the new incineration plant seem like a big win. The main argument is that sanitation is guaranteed, waste disappears, and energy is created. You clearly minimise the importance of target values that will be mandatory for municipalities in the future, e.g. amount of packages to be recycled.

Expert comment on the municipality case



Advice for the group – to be shared in the end

- Focus on optimising the existing separate collection system, because with collection rates at only 35%, there's lots to work on. This would include implementing a door-to-door scheme for all residents. Showcase how, with some initial investment, the scheme is proven to deliver higher recycling rates and better quality recyclables which are able to be sold at a higher price. With reduced mixed waste, door-to-door schemes are proven to save money for the municipality, too.
- Organics is the priority – collect it from households directly and encourage home/community composting throughout the municipality. Highlight the economic savings here, as well as obvious environmental benefits.
- Pilot PAYT locally to begin with, in a section of the municipality with the aim of having it implemented across 100% of the city after a couple of years of testing a gradual roll-out.

- Introduce reuse and repair centre(s) where possible with some municipal support, although ideally you would create an environment where social enterprises and businesses working on CE issues could flourish.

Additional advice regarding the Zero Waste Certification:

- Present the Zero Waste City Certification as a valid option that provides a mentor to guide them through the process. This mentor can offer benchmarks, solutions, and expert support without requiring an extensive search or vetting phase. This frees up significant capacity for the already stretched in-house team.
- The second benefit is that integrating the zero waste strategy and action plan as part of the certification process ensures they receive structured guidance. This helps them implement all the necessary changes efficiently, streamline communication efforts, and ultimately improve their public rating.

CASE 2

Municipality profile

- The municipality is relatively small, with a population of 15,000. It is quite rural and geographically spread out. 90% of the population have access to a garden, with the municipality covering a 1000 km² area in total.
- Its 15,000 inhabitants are generating 280 kg of mixed waste per capita per year.
- The average income of local residents is below that of the EU. Most residents' income comes from either agriculture or jobs that require travelling to the nearby big city.
- 60% of the local population are over the age of 50. It is an ageing population, with most younger people moving to bigger cities nearby.
- The municipality has a public waste management company, which it owns 100%. The company reports to the mayor and is responsible for the collection and treatment of waste.
- Door-to-door collection is currently only offered to a small area within the municipality, in the most densely populated area. Only 20% of residents have their waste collected at the doorstep. The rest are required to drop their waste at certain drop-off points with separate street bins.
- The average separate collection rate in the municipality is 37%, but this differs greatly between the areas which receive door-to-door separate collection and between those where people bring their waste to street bins:
 - Glass: street container for all.
 - Door-to-door collection of mixed waste + paper and cardboard + plastics/metal/drinks containers (PMD).
 - Street bins for mixed waste + paper/cardboard.
 - No separate collection of organics but some of the population carry out their own composting activities, particularly those who have farms or farm animals.
- 75% of the mixed waste is currently sent to a local landfill, but this is at 95% capacity, so it cannot continue for much longer in its current state.

- The remaining 25% of mixed waste is sent to the neighbouring big city's incineration plant. The contract for this is up for renewal in 8 years and is based upon a fixed fee, rather than based upon the volume of waste that is sent.
- There is one central drop-off location that citizens use for hazardous, electronic, and bulky waste located within the city centre. The recyclable materials here are then transported to the larger recycling plant at the nearby big city, which is 30 km away.
- The municipality is interested in the possibility of introducing a PAYT scheme but worries about the older population not liking the changes.
- The main local business and economic sectors are HORECA and elderly health care.
- Currently, residents pay a flat base rate of tax to the municipality for waste collection and management, which does not differ depending on the amount of waste they produce.
- There has been very little encouragement of reuse locally but many of the inhabitants would support actions on this, as they are aware that the landfill is close to being full and of the environmental risks this poses. There are no repair centres in the local area, although some individual tradesmen offer the service themselves, but this is unorganised and irregular.
- Leaflets have been shared with each household about the importance of recycling and on how to separate their waste. The municipality sees the good results of its door-to-door collection in the densely populated area, but it is worried about extending this to the whole population as they fear people will not have the space for extra bins. They also worry about the extra costs of door-to-door collection, which would involve vans driving further.

Stakeholder personas

Municipality representative



You are cautious about both the costs of any new policy and the ability to change the behaviour of an ageing population. The municipality is under-resourced and, therefore, very open to suggestions and ideas from external experts. However, the municipal budget is limited, and there is little interest from some colleagues, so any decision needs to be sustainably financed and politically easy to support. For you, clear data and practical examples are essential. You come into the discussion looking for ideas and actionable solutions that could improve the local situation – you want to listen to the 'experts' and leave the meeting with tangible policy ideas that could work in your municipality.

Waste management company owner



The waste company is owned by the municipality. As the company owner, you have worked for years to satisfy the municipality requirements, but you have also built up your hidden marketing network of recycled materials that you are not reporting. The proposals by zero waste practitioners might work if the final owner of a company – the municipality – gets excited. This, however, would ruin your comfortable business plan.

The current incineration approach is expensive for the city but profitable for the company. The contract expires within the next 8 years. So, it is your interest to postpone any actual zero waste activities until then. After that point, you would agree to planning sustainable waste management without landfill and incineration anyway. The biggest concern is that current contacts offer stability. You have a serious fear of changes.

Disruption



The head of the waste management company gets arrested for fraud and illegal side businesses in the recycling market. The company is temporarily closed by the police and, after a short search, another waste company takes over the waste management at the municipality. It happens fast – mostly because the new waste management company owner is friends with the mayor. The new head of the waste company has ties with the waste-to-fuel industry and it's rumoured they are interested in developing that direction. Your next meeting is with the head of this company.

Stakeholder persona after the disruption

New waste company



You are an “old machine” who knows all about waste, very technically skilled and supportive of innovations. You know how things work in the field but you are struggling when it comes to soft approaches and to communicating effectively with residents (specially elders). You have high goals to improve waste management, but are very eager to follow the realization of waste-to-energy practices as this is the best thing you know. You are strongly committed to do your job well, although you are not putting environmental impacts first.

Expert comment on the municipality case

Advice for the group – to be shared in the end



- Collect and build your evidence bank which shows why Waste-to-Energy is such a bad idea for the municipality. Use mostly climate and energy efficiency reasons, whilst showcasing the lock-in effect on waste generation that these incinerators have. With the right collection system in place, the volume of mixed waste can be drastically reduced here, which means there is no need (and no economic sense) in building the Waste-to-Energy plant.
- Focus first on the benefits that greater collection, recycling, and prevention can have to reduce the need for any incinerators.

Additional advice regarding the Zero Waste Certification:

- In the Zero Waste Cities Certification, building a new incinerator is ruled out as a practice in case the city wants to get an incinerator. The fear of missing out and not belonging to a group are strong in humans, so think how to use them to your advantage in the discussions.

CASE 3

Municipality profile

- The municipality is large and quite urban. 20% of the population have access to a garden.
- 400,000 inhabitants generate 380 kg of mixed waste per capita per year.
- The average income of local residents is below that of the EU. Most residents' income comes from the service sector (government, finances, customer support).
- Language diversity: 2 different languages spoken by residents throughout the town.
- The municipality partners with the local waste management company, who are responsible for implementing the waste and separate collection systems. The municipality has an overall say and control over which company operates this programme, but the waste management company is realistically the only business who have the capacity and technical requirements to run this service within the local area.
- Last year there was a 55% separate collection rate in the municipality:
 - Glass: street container.
 - Door-to-door collection of mixed waste + paper and cardboard.
 - Plastic bottles: street containers.
 - No separate collection of organics.
- Separate collection rates have been stable at around 50-55% for the past 5 years, despite a couple of public awareness-raising campaigns on why and how to recycle.
- Most of the mixed waste (75% approximately) are landfilled locally.
- There are two central drop-off locations that citizens use for hazardous, bulky, garden, and organic food waste within the municipality, with relatively good use rates.
- The municipality is interested in the possibility of introducing a stricter PAYT scheme, with local businesses not opposed to the idea either, but no action has been taken yet due to competing schemes and the city being unsure which one to adopt.
- There are no repair or reuse centres in the local area, although some businesses do offer the service for a small fee.

Stakeholder personas

Waste management company owner

You are a person of obvious practical concerns: you are both stern, old school, and unfavourable to suggestions of soft and poorly defined measures. You think in people, trucks, tons, euros – not long-term visions and social innovations. It's all about waste management technology and performing the core services the company was founded for.



Municipality politician



You are covering the tourism sector, which is very commercialised and with minor sustainable practices. You are aware of the waste overload problems but don't have much knowledge about waste management. You are looking for quick solutions and economic gains. Numbers, results, and reputation are very important to you. You are a bit afraid of change and don't want to lose the municipality's popularity or your own re-election. You might not see the benefits that zero waste measures could bring to the municipality

Disruption



Your local mayor has announced that the city's finances have secretly not been well-managed for several years and, as a result, each department is being asked to cut its budget by 30-40 %, which includes the waste management department. You also need to prove value for money for your activities and contracted services, with any new or increased revenue coming in (e.g. recyclable materials) being actively encouraged. Your next meeting is with the consultant for the mayor in charge of overseeing budget cuts.

Stakeholder persona after the disruption

Consultant for mayor in charge of overseeing budget cuts



Money is tight and every policy needs to have a solid bank of evidence showcasing its costs, value, and impact. Time is also in short supply for you these days, so you want facts presented clearly and efficiently – you are not afraid to demand these from those with whom you meet. Waste is not your area of expertise and action on waste/recycling has been limited in the past – so not only do policy changes need to be well-evidenced, but you are also seeking easy sells to the population.

Expert comment on the municipality case

Advice for the group – to be shared in the end



- Gather all the necessary data possible surrounding the municipality's waste budget so that you can understand where costs can be saved or reduced. For example, the key indicators are the fees for disposal, the operational costs of the collection and treatment, as well as the revenue made from selling on recyclables and (if relevant) the income generated by any EPR scheme used.
- To improve collection – focus on organics! Community composting could be one option or, if not, you could explore a central composting plant with potential biogas capture ([see the Milan case study for inspiration](#) .
- Explore local partnerships and options to embed reuse ([see briefing document for guidance](#) .

Additional advice regarding the Zero Waste Certification:

- When thinking about the Zero Waste Cities Certification, it's good to keep two things in mind: Firstly, a vast majority of tourists prefer sustainable destinations for their holidays, even if their actions don't always match their ambitions. So, having a label to prove it adds brand value. From a marketing point of view, the cost of the certification is very cheap. And secondly, the certification and especially the guidance and benchmarks it gives takes a lot of guess work and mistakes out of optimizing the actual performance. Think how you would explain these to the people in the meetings in a short and interesting way.

CASE 4

Municipality profile

- The regional government consists of 4 small municipalities of 2,000–3,000 inhabitants each, with 10–15 km distance between them, in a rural area with no high-rise buildings. The vast majority of the population have access to a garden.
- Altogether, 9,000 inhabitants generate 350 kg of mixed waste per capita per year.
- The average income of local residents is above that of the EU. Most residents' income comes from the tourism sector and the food production industry.
- 3,000 people of additional workforce commute to the region daily and weekly from neighbouring areas.
- The regional government has a contract with a private waste management company, who is responsible for implementing the waste and separate collection systems for mixed waste and recyclables. All biowaste is collected and treated by one local farm that is happy to use the compost it generates. The government has contracts with both, and they will run out in 5 years.
- 65% separate collection rates in the municipality:
 - Door-to-door collection of all waste: glass, paper and cardboard, organics, mixed packaging, mixed waste.
- The door-to-door collection system has been in place for one year, which caused the separate collection rate to go from 20% to 65% (the system in place before was a bring system with public collection points on the street supplemented by mobile collecting points).
- Mixed waste goes to an incineration plant located 300 km away, with a gate fee of 150 euros/ton.
- There is no central drop-off location for hazardous and bulky waste, the service is available only on demand twice a year (hazardous waste for free, bulky waste for extra pay).
- Currently, residents pay a flat base rate of tax to the regional government for waste collection and management, which does not differ depending on the amount of waste they produce.
- Local food producers offer food delivery in reusable packaging and have a "factory shop" where they sell their produce in bulk. Reusable tableware dominates public events.
- During the launch of the door-to-door collection, a media campaign was organised for all the towns to inform inhabitants about the changes by visiting and doing events in all neighbourhoods.

Stakeholder personas

Waste management company owner



The waste company operates on the basis of a contract between you and the local government. The conditions are fixed in the contract. You only see proposals by zero waste practitioners as doable if they fit into existing contracts; or you might use it in future contracts. You cannot change the content of the contract, but sometimes we can do more. Additional work, however, has a cost. Proposals are certainly valuable if they let you save costs, e.g. cutting transportation costs. New ideas would need to be presented to show how they can facilitate the company to fulfil the contract.

Municipality representative



Performance is already high, so you are not desperate to change – but you know that the current fees and costs of the system are too high in comparison with other places. Come into the discussion with an open mind, looking for new ideas, whilst also remaining very pragmatic about things. There is a bit of frustration with the lack of flexibility from the contracted waste company, but the performance has increased so much over the past 12-24 months that you cannot complain too much. As a region, you know that any change in policy must be clearly planned and thought through, especially as you will be the one presenting these to your municipal colleagues. Therefore, data and evidence of such policies working elsewhere are key.

Disruption



The largest importer of your waste for recycling and disposal decided to stop waste trade permanently. The city is left with a third of its waste streams without a final step. Waste starts piling up, there is a risk of overflow and the city government frantically looks for solutions. The industry suggests incinerating all the remaining waste. Your next meeting is with the representative of the city's waste management team.

Stakeholder persona after the disruption

City's waste management team



You are in a position of power, but not ultimate power (not the mayor), so while largely autonomous, big decisions will have to be screened, plus the waste management company will need to be convinced to comply. Therefore, your mindset is one of openness to any solutions, allies, but you quickly evaluate them through thinking out loud and asking follow-up questions. After all, you are tasked with preparing concrete proposals for solving the disruption and doing that fast. In the short-term response there's no place for intangible measures, but mid- and long-term there is and the team knows these can complement each other.

Expert comment on the municipality case



Advice for the group – to be shared in the end

- In waste management, volume matters. Instead of building a system for 4 individual sites, cooperation would offer savings and flexibility for the municipality. Due to the small number of people, communication is easy. Motivate people to source-separate waste and do home composting. However, feedback and continuous education has a great role. As a Zero Waste Ambassador, you could take the role of building communication and feedback plans for people, encouraging community-based actions, and serving waste collection and treatment in a way that consolidates the community. Let everyone feel like a player in this. Keep in mind that income and profit for waste in such a small region is also small, and the waste company is probably not willing to lose it. Perhaps it is possible to find a trade-off between new proposed actions (be it building repair shops, recycling centre, or similar).
- In waste management, volume matters. Instead of building a system for 4 individual sites, cooperation would offer savings and flexibility for the municipality. Due to the small number of people, communication is easy. Motivate people to source-separate waste and do home composting. However, feedback and continuous education has a great role. As a zero waste practitioner, you could take the role of building communication and feedback plans for people, encouraging community-based actions, and serving waste collection and treatment in a way that consolidates the community. Let everyone feel like a player in this. Keep in mind that income and profit for waste in such a small region is also small, and the waste company is probably not willing to lose it. Perhaps it is possible to find a trade-off between new proposed actions (be it building repair shops, recycling centre, or similar).

Additional advice regarding the Zero Waste Certification:

- For a waste management company which has achieved to bring the municipality from poor or average performance to good or great, the European recognition that the certification provides is a good motivator and can act as a seal of excellence for their services. Consequently, it is good for their marketing. This is of course only interesting for private operators who have interest in growing.
- For smaller municipalities with typically more community spirit but at the same time less exposure to media, resources or other benefits, the certification can be a good tool for bringing people together and attracting resources.
- When talking to decision makers, it is good to highlight that the city is already complying with the minimum target of the separate collection rate which is one of the hard objectives which must be reached. Consequently, it scares many decision makers who do not reach it yet. So, complimenting both the waste management company and municipality staff of already going beyond the bare minimum both brings them a sense of achievement and a reassurance that they will not fail the certification audit.

CASE 5

Municipality profile

- The municipality of 3,000 inhabitants is on a relatively remote island, with one major port settlement, several smaller villages and dispersed housing. The vast majority of the population is traditional and homogenous. They have access to a garden, but the soil is very rocky.
- Altogether, the inhabitants generate 200 kg of mixed waste per capita per year.
- The average income of local residents is below that of the EU. Most residents' income comes from fishing, marine aquaculture and tourism.
- Waste is managed by a subsidiary of a larger public waste management company on the mainland. Waste is being separately collected, but recyclables are currently all being shipped to the mainland. The exception is biowaste turned into compost at home, since it is not collected by the company. The concession contracts renew every 10 years.
- 25% separate collection rates in the municipality:
 - A bring system collection of: glass, plastic packaging, organics, mixed waste.
 - The system of collection hasn't changed in the last 10 years.
- Mixed waste goes to a small local landfill with limited capacity – this will have to change in the next 10 years. There is also a problem with its stability and odour. The landfill tax is low.
- There is only one central drop-off location for hazardous and bulky waste (in the port), with an on demand paid service for collection at the doorstep.
- Currently, residents pay a flat base rate of tax for waste collection and management, which does not differ depending on the amount of waste they produce.
- Local farmers offer food delivery in reusable wood packaging and there are several farmer's markets around the island. Restaurants don't provide reusable packaging.
- Single use tableware dominates public events.
- Elections for the new mayor are to be held in a year, with several parties competing for control. Waste is a topic of political and public discourse.
- There is no CSO or activist group dedicated to environmental protection, but the ones from the mainland occasionally get involved.

Stakeholder personas

Waste company representative



To you, this is just one of the plethora of islands the company manages waste for, you feel no special attachment. You are aware the landfill is nearing its full capacity, but feel no rush yet in addressing it. There's always the option of shipping the waste elsewhere and experience elsewhere shows decreasing the amount of waste that ends up in disposal is possible, which could extend the lifetime of the landfill. But decisions like that are up to politicians to decide, you're just an engineer.

Mayor



Being from a small municipality, you only have 4 staff members to help you run the place, yourself being a volunteer. The small team has to cover all areas of public interest, therefore nobody has deep knowledge or a narrow field of work and there is a significant strain on available time. Still, everyone is dedicated and wishes the best for the island. You plan on running for office again and there is stiff competition from a party promoting a shift to mass tourism on the island.

Disruption



A strong earthquake occurred, damaging a bunch of infrastructure and destroying several buildings. It triggered a landslide at the landfill, exposing old layers and further reducing capacity. Reconstruction of the island will take some time, but will also generate a significant amount of construction waste. Waste amounts are projected to increase also due to all the temporary workforce needed for restoration. Roads are damaged and waste collection limited, causing pile-ups and increasing the chance for fires.

Stakeholder persona after the disruption

Reconstruction manager



You were called in to oversee the restoration efforts, since the local authority was overwhelmed and does not have the capacity to coordinate. You are experienced and have a vast array of resources, backed by the national government, but are limited in scope – you have a single mission there and a limited amount of time to achieve it: 3 years. Besides restoring roads and undoing the most obvious damage, a concrete plan for full reconstruction has not yet been made.

Expert comment on the municipality case



Advice for the group – to be shared in the end

- Balance your expectations – resolving the immediate aftermath will be everyone's top priority and initially they won't want to think about mid- and long-term planning. Think about how zero waste thinking could contribute at this stage.
- After that is done, there is clearly an open question on what to do with the landfill. Does fixing it up make sense in such constrained conditions, are there alternatives, combined approaches? Election priorities might change in light of the new circumstances, but clearly there are opportunities for improving long-term resiliency and self-sufficiency of the island.

Additional advice regarding the Zero Waste Certification:

- Looking at the Zero Waste City Certification for inspiration and guidance, since it provides a sort of action plan on how to get there, would be a good mid-term step.

ADAPTATIONS TO THE ROLE PLAY

The role play can be used also with a different type of profiles instead of municipalities. For example, if the training is more on organisational focus, then the profiles can be about different organisations (e.g. restaurants, event venues). Here we offer two school profiles.

Additionally the role play can be made either longer or shorter, adding or removing stakeholder personas (parents, different unions, community representatives etc). In the cases below, after the disruption, the groups only meet with the journalist persona.

SCHOOL CASE 1

- Suburban school (~1,000 students, ~80 staff members). Approximately 850 students eat school lunch daily at different times. The school has its own cafeteria and also provides after-school meals.
- The school generates approximately 120 kg of food waste per day (50 kg of edible surplus food and 70 kg of plate waste).
- In the future, mixed municipal waste will be more expensive than separately collected waste streams. Reducing mixed waste therefore enables long-term cost savings.
- The cafeteria does not have a proper separate collection system. Food waste is currently disposed of together with mixed municipal waste. At the same time, there is an existing example of a community food-sharing fridge in the area, and bio-waste collection is included in the organised municipal waste collection system.
- On some days, when food remains after lunch service, students are allowed to eat the remaining school lunch at the end of the school day. Parents are expected to inform the cafeteria when their child is absent, allowing the kitchen to plan food quantities more accurately.

Stakeholder personas

School principal

For you, the school's reputation, risk avoidance, and practical, easy-to-manage solutions are important. You do not have a clear overview of how the cafeteria currently addresses food waste reduction or how waste management is organised in the cafeteria. You are concerned that food donation might be complicated because food safety regulations are very strict. You are also worried that a food-sharing fridge could turn into a place where unwanted food waste is dumped. How much additional funding would such a system require? Where would the money come from? In general, you support reducing food waste, but before making any decisions you want answers to your questions.



Cafeteria manager



You are sceptical and cautious. You always try to plan food quantities carefully to minimise surplus, but there is always some leftover food. You know that food safety requirements are very strict. Your staff are already overloaded. Who would be responsible for maintaining the food-sharing fridge? What kind of containers would the food be placed in? Would the cafeteria need to wash those containers beforehand? Where would the refrigerator even come from? Perhaps it would be better to start with a simpler solution: allowing parents, students, and teachers to bring their own containers at the end of the day to take leftover food home. The fact that food waste is currently disposed of together with mixed municipal waste makes you uncomfortable, and you promise to discuss separate waste collection with your staff.

Disruption



The Food Safety Department has received information about plans to establish a food-sharing fridge. Attention is drawn to the fact that, under the current Food Act, only unserved food may be donated. The school is asked to respond to the following questions: How will food safety be ensured? Is the food donation system described in the cafeteria's self-monitoring plan? Your next meeting is with their representative.

Stakeholder personas after the disruption

The Food Safety Department representative



You like rules and order, and you think food safety is very important, because not following these rules can actually have health implications. At the same time you understand the general need to reduce food waste and it has been the internal signal within the Department that there should be more openness regarding redistributing leftover food. For you it's important though that it's done safely and that all risks are managed.

Local media representative



Your article must have news value. You got here with this knowledge: More than 100 kg of food is thrown away every day at the school and disposed of as mixed municipal waste. At the same time, the school is planning to start redistributing this food. Is this safe, and why has this not been done before?

Expert comment on the school case



Advice for the group – to be shared in the end

Prepare a short and clear evidence-based argument explaining why the school should reduce food waste and introduce a food-sharing fridge. Emphasise that you are part of the Green School working group whose goal is to apply for the Green School flag, which makes systematic action essential.

Present concrete data: the school wastes 50 kg of edible food every day (approximately 10 tonnes per year), resulting in both a significant environmental impact and unnecessary financial costs. Explain that the current situation, where food is disposed of together with mixed municipal waste, is not sustainable and is also inconsistent with existing requirements (recyclable waste streams that are separately collected must not be disposed of as mixed municipal waste, and biodegradable kitchen and canteen waste must be collected separately). In addition, this practice is not in line with the principles of a Green School.

If questions arise regarding liquid food waste, explain that there are existing solutions for collecting liquid cafeteria waste, such as sealed collection barrels. Also point out that the municipality's waste management officer can always be consulted for guidance and support.

SCHOOL CASE 2

- Suburban school (~430 students, ~70 staff members). The school has its own cafeteria where meals are prepared on site. After-school meals are also provided. Once a year, each class participates in a school trip, and every student brings their own food.
- School trips generate large amounts of single-use packaging waste (juice cartons, drink bottles, and various other packaging) as well as food waste. Teachers find it difficult to manage the resulting waste and organise separate collection during the trip.
- Different families' financial possibilities must be taken into account when considering what kind of food and drinks students bring with them.
- All waste generated during the trip must be taken back with the group, as it cannot be disposed of at the destination. Since part of the food remains uneaten, both packaging waste and food waste need to be collected separately.
- So far, no guidance has been provided on how to reduce waste during school trips.

Stakeholder personas

Representative of the excursion destination (museum, art gallery etc)



You are open to discussing both the content and organisation of the visit. For you, it is important to avoid risks and ensure practical, easy-to-manage solutions, while the main goal is to provide a high-quality visitor experience. Visitors are allowed to eat food they have brought with them on site, but all waste generated during the visit must be taken away by the visitors themselves.

Cafeteria manager



You are cautious about changes. You always try to plan food quantities carefully so that as little surplus as possible is generated, but there is always some leftover food. You know that food safety requirements are very strict. You suggest one possible solution: students could take that day's school lunch with them on the trip in their own containers. However, you see several challenges – the food would need to be something that is suitable to eat cold, and you are not sure whether taking food away in personal containers is even allowed under current rules. You are somewhat confused by the requirements, but you genuinely want to help.

Disruption



The School Board of Trustees has received information that the school is planning to provide takeaway school meals for excursions. It is currently unclear to them whether each student is expected to bring their own container, or whether the school plans to introduce a reusable container system in which the cafeteria packs takeaway-friendly meals into reusable containers that students return to the cafeteria after the trip, is this planned to be done also in the future and what kind of food safety risks would this bring. Your next meeting is with their representative.

Stakeholder personas after the disruption

Representative from the School Board of Trustees



You are a busy person who has to deal with a hundred questions a day, the school issues among them. Your priority is that the rules are followed and that the school doesn't get into any legal problems. You are not a big fan of new initiatives, as you mostly focus on the potential risks they may bring. At the same time, it has been indicated that the School Board of Trustees should be more open to teachers' new ideas. You are not sure what kind of change the school is trying to bring and want to understand the situation better.

Local media representative



You are excited about the possibility that this school could become the starting point for a new kind of solution. You ask questions about responsibilities, costs, hygiene requirements for reusable containers.

Expert comment on the school case



Advice for the group – to be shared in the end

Present concrete data – for example, after every school trip there are X bags of packaging waste (specific numbers are important), often containing partially uneaten food. This creates both a significant environmental impact and financial costs, as mixed municipal waste collection is becoming increasingly expensive. It also requires teachers to constantly remind students to take all their waste back with them.

Explain that the current situation is not sustainable. Instead of continuously banning, reminding, and managing waste, it would be more effective to create a system where less waste is generated in the first place and where students can experience in practice how a reuse-based system works.

Your goal is to demonstrate that it is possible to organise a school trip without creating piles of waste.

Regarding takeaway food options, suggest involving students in designing the menu – asking what they would realistically enjoy eating during a trip (e.g. wraps, sandwiches, cucumber and tomato snacks, poke bowls, etc.).



EXPERT COMMENTED MUNICIPALITY PROFILE

How an expert reads and analyses information

Case 1 municipality information

Size is important: it will give us a critical mass of waste that is linked to cost and income	The municipality is medium-sized (200,000 inhabitants) and is quite residential with lots of high-rise buildings in densely populated areas and suburbs. Only 30% of the population have access to a garden.	Not much industrial waste
Cannot use individual options, anonymous client		Lower transport distances, easier to collect
This volume is a bit too much compared to background data, there is space for reduction, check for errors in statistics	2200,000 inhabitants generate 550 kg of mixed waste per capita per year, which includes a lot of waste coming from local cafes and restaurants.	Less garden waste available, homecomposting will make little sense, brown biowaste bin becomes a must
So they have massive catering? Is that waste included in residential amount? Try to keep household and catering amounts separately, go for food waste reduction and brown biowaste bin	The average income of local residents is below that of the EU. Most residents' income comes from the tourism and hospitality sectors.	Calculate total amount, make waste audit, calculate sum per each material
Language diversity requires information campaign in all languages but mainly about 'how-to-separate-and-collect'	Challenge of language diversity: there are often 5 different languages spoken by residents throughout the town.	Tourism requires information campaign
	The municipality partners with the local private waste management company which is responsible for implementing the waste and separate collection systems. The municipality has an overall say and control over which company operates this programme, but the waste management company is realistically the only business that has the capacity and technical requirements to run this service within the local area.	Municipality rules, but they have no trucks and personnel. Private waste company does collection. Each proposal that municipality has, has a price. Discuss with waste company what could be realistic solution.
So the private company actually rules! Do you tolerate this or would you diversify?		If you propose changes in collection and treatment then one has to invest. Do you propose public, private or private-public ownership? This depends on local-national financial context, might need discussion with financial experts.
Good figure for a start! It means that residents are willing to participate. Expand!	35% separate collection rates in the municipality: - Glass: street container - Door-to-door collection of mixed waste + paper and cardboard - Plastic bottles and metals: street containers - No separate collection of organics	Consider collection of packages. See what is in the legislation, one has to collect WEEE, hazardous waste and bulky, too
Without introducing separate collection high recovery rate is not possible. Support the door-to-door idea.		Why do we need street container system if we have high rise buildings where door-to-door is doable easily.

Not my worry, irrelevant data for me	An incineration plant is used for the vast majority of mixed waste and has a contract to run for next 5 years. The incinerator services many towns and communities across the local region, charging high taxes due to there being little alternatives available for municipalities to manage their waste. The plant is 50 km away from the town, resulting in high transportation costs, too.	Any other waste treatment facility requires time to build. 5 years is quite close, until then we can afford incineration. You are bound by a contract, but consider not prolonging it after 5 years, start with investments to reduce incineration
Any other waste treatment method cheaper than that is worth doing		If we can introduce more local treatment options, then we can offer source-separation collection schemes with financial motivation to recycle rather than incinerate
Have better sorting, incinerate only what is inevitable		
It's a good start to show what's possible	There is one central drop-off location that citizens use for hazardous, bulky, garden, and organic food waste, which is currently 10 km outside of the town, with low usage rates of around 5-10%.	Study the cost components, is it incineration tax, transportation or just high gate fee? Transportation you can reduce by considering transfer stations and transport optimisation. Incineration tax you can avoid by not incinerating! Huge gate fee can be a motivator to change the current waste treatment practice & waste collection practice
Very wrong place, too far for frequent use		
And here is a proof: wrong locations equals to low usage and pointless business. Bring it to town, make it easy to use for citizens. Collect large variety of waste materials. Try with no fee or low fee. PAYT is possible	The municipality is interested in the possibility of introducing a (PAYT) scheme, with local businesses not opposed to the idea either, but no action taken yet due to capacity.	The prerequisite for PAYT is very good source-separation and separate collection. Introduce this first-hand, and only then consider PAYT. Managing PAYT requires funding too, and it can be too expensive to apply, even if it feels a fair play
Flat rate does not motivate, differentiate the price – mixed waste has to be expensive, well sorted waste has to be free or cheap		
This is private initiative, the government can just support it, nothing more	Currently, residents pay a flat base rate of tax to the municipality for waste collection and management, which does not differ depending on the amount of waste they produce.	One shop has insignificant effect on waste volumes, but has a great effect on public opinion – keep going. Best if it is in location of the municipal dropoff centre – one place to visit
	One small and independent packaging-free shop has been established in the town within the last 12 months, but otherwise there remains little to no encouragement of reuse. There are no repair centres in the local area, although some businesses do offer the service but with a small fee.	
Good start, keep going, but remember that educating citizens is in the end lifelong work	Educational posters have been spread around the town in the past to encourage the use of separate collection bins for residents and tourists, as well as some social media advertising paid by the municipality to encourage more young people to participate in separate collection and reuse activities.	Education has to be life-long, posters have limited effect

Expert comments:

- We have no information about waste composition. Propose making an audit.
- We have no info about the waste company. What are they capable of, what obligations do they have in contract?
- We have no info about infrastructure, amount and type of bins, trucks, facilities.
- We need to find the people who are making decisions in the city and the waste company. In the end we need our proposals to find their way into investment plans.
- We have no info about how the city is administered. There has to be a waste or environmental regulation in the city. Find it.
- We do not know the national regulations. We can only guess that the location is in Europe, so EU directives will apply too.
- We definitely need to draft a waste management plan for the city with a 5+ year perspective and in relation to national ambitions.
- Every decision has a price tag. Learn about the financial situation with the current waste system. How the flat based rate was proposed? Can we propose a better one?
- Planning has to cover ALL waste fractions and consider ALL target values, not just easy-to-reach or popular ones.

What is irrelevant info?

Mere recognition that the system is like that and cannot be changed is a justification for doing nothing. One should be guided by national targets.

TERMINOLOGY

A mixed waste audit (assessment) – the process of understanding what remains in the non-recycled bin. The process includes collecting mixed waste from a certain % of local households, then analysing it to obtain data on the type and mass of categorised materials.

Advocacy – the act of speaking up, organising, and taking action to change decisions, rules, or practices that affect people's lives.

Compostable – used to describe an item that can be composted. It can be quite broad and contentious, as composting is a process that occurs in various formats and at different temperatures. For example, an item can be compostable if done in a high-production setting where the temperatures are very high, but it will not compost in regular home (garden) composting conditions. An item's compostability must be verified through certification (like EN 13432) and requires appropriate infrastructure: many "compostable" products only break down in industrial facilities, not home composting or natural environments. More details regarding compostable, biodegradable, standards, labels, etc., [in this article](#) .

Deposit Return Scheme (DRS) – policy instrument, where a small deposit is placed on the price of a product or item, that is returned back to the consumer when they return the reusable product or item to another participating service provider or drop-off point. Most commonly the items are containers.

Extended Producer Responsibility (EPR) scheme – policy instrument available to governments. It applies the 'polluter pays principle' by placing the responsibility of a product's entire life cycle – from designing environmentally friendly and low-impact products to managing their end-of-life – onto the producers themselves.

Material (waste) fractions¹ – visually sortable materials like paper, plastic, glass, food waste, etc. Usually, this is enough to sort waste into these categories at home. Each material fraction, however, contains many sub-fractions. For example, the paper and cardboard subcategories are office paper, newspaper, books, magazines, cardboard, and corrugated cardboard. Sub-fractions are important on the material market, where prices are specified in great detail based on material specifications. Material fractions are sometimes separated into sub-fractions at the source and further separated by quality classes in waste sorting facilities. It is a good exercise to check the local market of waste materials to see which quality classes are most appreciated.

Municipality/national/international policies – official regulations, guidelines, ordinances, and strategic frameworks established by authorities to manage waste, promote resource efficiency, and advance zero waste goals within their jurisdiction. For example, municipal policies can create the legal and operational framework for community-wide waste reduction and circular economy transitions.

¹ Overview on how different waste data types relate to each other can be read in *Waste Data Basics* chapter

- **In practice:** mandatory waste separation ordinances, bans on specific single-use items (plastic bags, polystyrene), pay-as-you-throw waste collection schemes, landfill reduction targets, requirements for commercial composting, Extended Producer Responsibility (EPR) schemes, Deposit Return Schemes (DRS), or zero waste goals with enforceable timelines.
- **Zero waste principle:** systemic change requires policy intervention. Municipal policies translate the zero waste philosophy into binding requirements, level the playing field for businesses, set clear expectations for residents, and establish accountability mechanisms. Effective policies combine regulation (sticks), incentives (carrots), and education to drive behavior change at scale.

Preparation for reuse – an action done by the manufacturer, waste management or other organisation. These actions are: checking, cleaning, or repairing operations by which products or components of products that have become waste are prepared for reuse without any further pre-processing.

EU Waste Framework Directive legal term: “preparing for re-use” means checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing

Prevention policies/measures/initiatives – proactive strategies, programmes, and interventions designed to stop waste generation before it occurs, addressing root causes rather than managing symptoms. Prevention measures target production, consumption, and design to minimise resource use and eliminate unnecessary waste streams. Can be implemented at different levels (organisational, community, municipal, national, regional, and global).

- **In practice:** product design standards requiring durability and repairability, bans on planned obsolescence, minimum warranty periods, right-to-repair legislation, single-use plastic bans, packaging reduction requirements, food waste prevention campaigns, sharing economy platforms, reusable packaging mandates, or public awareness programs promoting mindful consumption.

Recovery – any waste management operation which results in waste serving a useful purpose by replacing other materials which would otherwise have been used. Recovery operations are listed as R-codes R1 to R 13 for legal purposes. It’s important to note that, under recovery, we can distinguish:

- **Material recovery** – any process of obtaining materials from waste that still have useful physical or chemical properties and can be reused or recycled for some purpose.
- **Energy or thermal recovery** – conversion of waste into usable heat, electricity, or fuel. Examples are incineration, pyrolysis, and gasification.
- **Chemical recovery** – decomposition of mainly mixed plastic waste to new polymers. It converts pyrolysis oil or gasification gas into feedstock for the production of new plastic materials.

Recycling – any recovery operation by which waste materials are reprocessed into products, materials or substances, be it for their original or other purposes. It includes the reprocessing of organic material. It does not include energy recovery or landfilling.

Redesign – the process of fundamentally rethinking and restructuring products, packaging, systems, and processes to eliminate waste and toxics at the design stage. Redesign applies circular economy principles to ensure materials remain in use, products are designed for longevity and disassembly, and negative environmental impacts are minimised from inception.

Refuse – the practice of declining or rejecting items, products, or services that are unnecessary (e.g. single-use packaging) and will ultimately become waste.

Refuse/Rethink/Redesign (action based on what is your role and power to influence) – the first and most important step in the zero waste hierarchy, as it prevents waste from entering your life or the waste stream altogether. Note that refuse is also an old synonym of trash, but has a slightly different pronunciation.

Repair – an action like fixing, mending, or restoring broken, damaged, or worn items to a functional condition, extending their useful life and preventing premature disposal. Repair challenges the throwaway culture by valuing maintenance, craftsmanship, and long-term product stewardship.

Rethink – solving a problem in a completely different way, avoiding the production of waste altogether. It often means *dematerialisation*, a change from the use of products to address a need to processes that obviate them. At the individual level, rethinking can mean repurposing items, such as using a plastic bottle to grow a plant or making furniture from outdated books.

Reusable – products or components that are designed by default for multiple uses, without the need for reprocessing, and are part of the system that assures the reuse.

Reuse – the practice of using a product or component multiple times for its original purpose or repurposing it for a different function, without significantly altering its form or original quality. At this level, products and components don't have a waste status. Reuse extends a product's lifespan and displaces the need for new purchases.

EU Waste Framework Directive legal term: "re-use" means any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

Separate collection – the practice of separating materials into distinct fractions (e.g., paper, plastic, glass, organics, textile, packaging, etc.) at the point of generation. It is a precondition for high-quality recycling and preparation for reuse. It also prevents hazardous substances from contaminating other waste streams, communities, and the environment.

Waste category – a broad class of waste with common characteristics like household and household-like waste (coming from residential areas, connected to our everyday life or households) or construction and demolition waste. Even though the details differ, the composition of such waste is predictable.

Zero waste – the conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning, and with no discharges to land, water, or air that threaten the environment or human health (as defined by the Zero Waste International Alliance).

Zero waste goals – goals that prioritise waste prevention (reduce), life extension (reuse), and material recovery (recycle) in that hierarchical order, with specific metrics and timelines for achievement. To achieve goals, quantifiable targets focused on **Reduce, Reuse, and Recycle** should be set to guide policy and waste management strategies to progress toward zero waste objectives.²

² Overview of Zero Waste Certification criteria can be found here: <https://www.missionzeroacademy.eu/about-miza/miza-library/> 

- **In practice**, targets will look like:
 - Reduction of municipal waste generation – 25% by 2030 compared to ... (year when baseline assessment was done),
 - Achieve 50% reuse rate for construction materials by 2035 compared to ... (year when baseline assessment was done),
 - 90% diversion rate of municipal solid waste (MSW) away from harmful disposal methods and false solutions,
 - Collects at least 5 of the key material streams.

Zero waste practitioner – a person who can argue, convince, and advise local decision makers on zero waste policies and business models, with at least a medium level of zero waste expertise.

Zero waste procurement – strategic purchasing approach that prioritises acquiring goods and services designed to minimise waste generation, maximise resource efficiency, and support circular economy principles throughout the supply chain. Zero waste procurement considers the full lifecycle impact of purchases, from extraction to end-of-life. It's a great way for a city/government to take direct action to reduce waste in their immediate control and also help shape external partners to become more circular.

- **In practice:** establishing procurement criteria that favour reusable over disposable products, requiring suppliers to eliminate excess packaging, purchasing durable and repairable goods, buying in bulk to reduce packaging, selecting products made from recycled or renewable materials, and contracting services that include take-back or responsible end-of-life management.
- **Zero waste principle:** organisations and institutions have significant purchasing power to drive market transformation. By embedding, for example, reusability or repairability criteria into procurement requirements, they create demand for sustainable products; incentivise producer responsibility; and demonstrate that waste prevention is economically viable and scalable. The municipality could also add a requirement to provide lifecycle analysis (LCA³).

³ LCA is a comprehensive methodology for evaluating the total environmental impacts of a product, service, or system across all stages of its existence — from raw material extraction, through production and use, to end-of-life disposal or recovery. LCA quantifies impacts such as greenhouse gas emissions, energy consumption, water use, pollution, and resource depletion to support evidence-based decision-making. <https://eplca.jrc.ec.europa.eu/ilcd.html> 

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