

#ZeroWasteCities



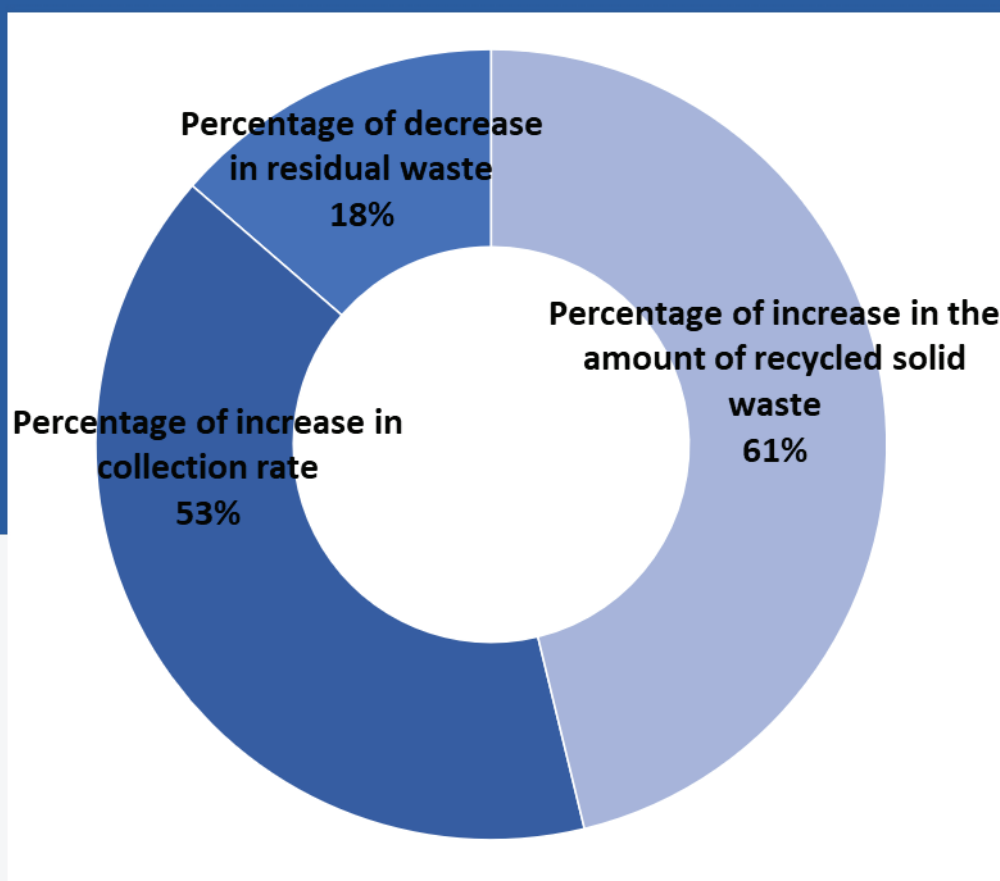
ZERO  
WASTE  
MONTENEGRO

# Case Study

## The Story of Gusinje

December 2023

In the rural regions of Montenegro, where the concept of "Zero Waste" was unfamiliar just 30 months prior to the project's inception, remarkable strides have been made in the municipality of Gusinje regarding waste reduction, segregation, and collection – surpassing initial expectations. What contributed to this success? It stemmed from the commitment of all key stakeholders, the guidance provided by Zero Waste Europe but moreover the active participation of the citizen.



## Geography

The municipality of Gusinje, officially established in Montenegro in 2014, is nestled near the Albanian border and is characterised by its rural landscape. Gusinje is characterised by its rural disposition, with a Municipality Development Index of Montenegro reflecting its status as an underdeveloped region. Situated at approximately 920 meters above sea level, Gusinje lies at the confluence of the Vruje and Grnčara rivers, within proximity to the Prokletije mountain massif. The National Park Prokletije, a significant portion of which falls within Gusinje's boundaries, adds to the area's environmental importance.

Montenegro's diverse geography spans 13,812 square kilometers, encompassing breathtaking coastlines stretching 293 kilometers along the Adriatic Sea and towering several mountain ranges.





## Demography

While officially reported demographic statistics as of the 2011 Census registered 4,027 residents and 1,168 households, only around 286 households (1,673 inhabitants) actively participated in waste collection programs at the beginning of the project.

Montenegro, has a population of approximately 620,000 people. Its three main cities are Podgorica, Nikšić and Budva with respectively 200k, 70k and 20k inhabitants.

## Project initiation

The NGO Zero Waste Montenegro (ZWMNE) approached the Regional Development Agency for Bjelasica, Komovi i Prokletije (RDA) to bring together one of the 23 municipalities of the country on the path to Zero Waste, as an example to the other municipalities. Gusinje, the third smallest municipality of Montenegro, showed enthusiasm to participate in the adventure and commitment.

The project 'Montenegro and Albania Towards Zero Waste' was financed by the EU through the IPA program for cross-border cooperation between Montenegro and Albania and started in February 2021, in partnership with a twin city in Albania: Margegaj.

Its primary objectives were the reduction of general waste through strategic waste reduction and the reduction of residual waste through the implementation of reuse, and recycling measures.

## Waste Management context and main challenges

Montenegro, as a whole, grapples with a range of waste management challenges. These include unregulated landfills, inadequate waste management infrastructure, limited financial and human resources in waste management companies, an underdeveloped secondary material market, and low public awareness concerning single-use plastics and waste disposal practices. These challenges are further compounded by insufficient law implementation, poor data records about packaging waste, and the absence of financial incentives for waste sorting at the source.

Before the project's inception, Gusinje's waste management system relied heavily on landfills, and with no dedicated recycling effort, statistics were not optimistic.

At the beginning of the project, Gusinje citizen generated in average 99 kg of waste per year per capita, without considering bulky items such as furniture, textiles, construction waste, and electronic waste. This is also excluding contributions from tourists, diaspora, and businesses. Those results were obtained through a door-to-door analysis of 10% of the households' waste and are in line with the municipal company's data.

**Separate waste collection was virtually nonexistent**, with the municipality relying on weekly mixed waste collection rounds. Waste prevention measures were minimal, limited to sporadic awareness campaigns by local activist groups. The escalating issue of pollution from unregulated landfills and dumpsites necessitated a holistic solution. Currently, waste disposal in landfills incurs no charges, posing financial challenges for alternative solutions to compete with.

Even with a manageable population of 1,673 inhabitants spread across 286 households, Gusinje faced considerable challenges in managing its waste efficiently.

Similar to many municipalities in Montenegro, Gusinje faces challenges due to its sole responsibility for waste collection and recycling, leading to a lack of economy of scale. To address this, the project proposed establishing a Material Recovery Facility with a hydraulic press, partnering with the capital city's recycling centre to optimise transport costs and facilitate joint exportation of recyclables.

Moreover, due to limited specialised education and training opportunities in Montenegro on waste management, many staff members of public utility companies struggle at times to stay updated with options available to them. Additionally, there is widespread distrust among many citizens towards the local and national government's capacity and willingness to implement positive and lasting changes for the country. This scepticism often hinders citizen support for new initiatives. To tackle these challenges, the project conducted numerous education and awareness campaigns on Zero Waste and brought in international experts to assist local teams, aiming to foster trust and empower local stakeholders in waste management initiatives.





## Legal Situation

While the legal framework in Montenegro, guided by the Law on Waste Management, National Strategy for Waste Management and State Plan for Waste Management, aims to align with EU waste legislation, the implementation is lacking.

A long-anticipated new Law on Waste Management, adopted in 2023, seeks to further harmonise Montenegrin waste legislation with EU standards.

Municipalities are directly in charge of implementing the WM Law, the WM Strategy and the WM Plan and organising the local waste management together with local public utility companies, which are founded by the municipalities and run as public enterprises. Even though, by Law, the mayors are responsible for the implementation of the legal framework on waste management, they are rarely held officially accountable in front of the relevant Ministry.

Against this backdrop, Gusinje finds itself at the forefront of a transformative project initiated by two NGOs – RDA and ZWMNE. This collaborative endeavour aims to enhance waste management practices in Gusinje and inspire other municipalities to follow the path to Zero Waste.



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Kerbside collection bins in Gusinje at the beginning of the project  
Foto: Pobjeda/Stevo Vasiljević

## Setting change in motion

The journey toward zero waste in Gusinje began with a thorough survey conducted by Zero Waste Montenegro in 2021.

The survey delved into the community's perceptions, revealing a resounding consensus – 99% of the population believed in the importance of goals like recycling and waste reduction. A subsequent door-to-door waste analysis, covering 10% of households, gave valuable insights into the actual waste composition.

The survey uncovered that 83% of respondents shared the view that there exists an excessive amount of unnecessary packaging and waste items. Notably, 77% of participants expressed their willingness to actively contribute to their city's transformation into a zero-waste municipality.

While 96% of respondents conveyed their readiness to donate unused items to the Centre for Reuse, only 51% displayed interest in acquiring second-hand items, such as furniture, electronics, and textiles, from a local Reuse Centre – due to the persisting perception in Montenegro that second-hand items are for 'poor' people.



## Creation of the ZW Advisory Board

The Zero Waste Coordinator of the project and the implementing partners have formed an active Zero Waste Advisory Board consisting of about 20 local decision-makers, business owners, teachers, local organisation representatives, and farmers. The ZW Advisory Board role is to help better understand the mindset of local people in order to plan future awareness-raising and educational activities steps and also to decide what models of waste management system would work best in the municipality.

Given the importance of local politics in many municipal towns across Montenegro, assembling a Board comprising diverse professions, genders, and individuals from various political affiliations posed a significant challenge. Nonetheless, the endeavor proved to be fairly successful, showcasing effective collaboration and inclusivity.



First Zero Waste Advisory Board (ZWAB) meeting in Gusinje

As Gusinje already had a kerbside collection, and the Zero Waste Master Plan (ZWMP) outlined to improve it by switching from a single-bin system to a five-bin one at the beginning of 2024. Other than that, the plan envisaged setting up of a local material recovery facility site, the implementation of a municipal composting system and also distribution of home composters and educational workshops on home composting and proper waste separation.

## Set up of waste separation tools and measures

This was crucial activity of the project as it provided actual tools for partners included in the project to guide and allow them to adopt new techniques of waste separation. Various factors were analysed and considered, including the number of beneficiaries, average household waste generation, total monthly waste quantities during both peak and off-peak seasons, capacities of communal waste management companies, current waste collection methods, and the most feasible steps toward waste treatment for reuse and recycling.

Among other responsibilities, the task included negotiating an agreement with the municipality regarding the segregation and collection of identified waste streams. With only one available waste collection truck in Gusinje, concerns arose regarding the feasibility of separate waste collection. To address this, we proposed a weekly schedule for waste collection in the city center, spread over five days. For remote or previously

underserved settlements, we recommended a separate schedule with recyclable waste collection once a month on different days. After thorough deliberations, the public utility company was persuaded of the viability of our proposal.

With the contribution of key stakeholders: the Advisory Board, the municipality and public utility company of Gusinje, as well as the invaluable support of Zero Waste Europe Technical Advisor, Mr. Favoino, the project team initiated the groundwork for implementing a five-bin kerbside waste collection system, slated for completion in early 2024. The waste separation scheme was established as follows:



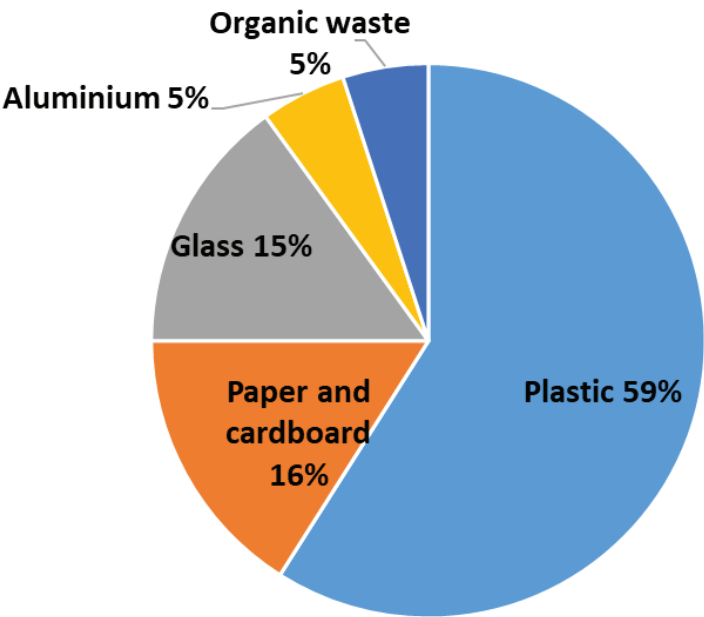


The initial tender for the bins was unsuccessful as none of the three invited companies fully met the technical specifications. Consequently, the tender process was restarted, with more companies invited and the technical specifications simplified.

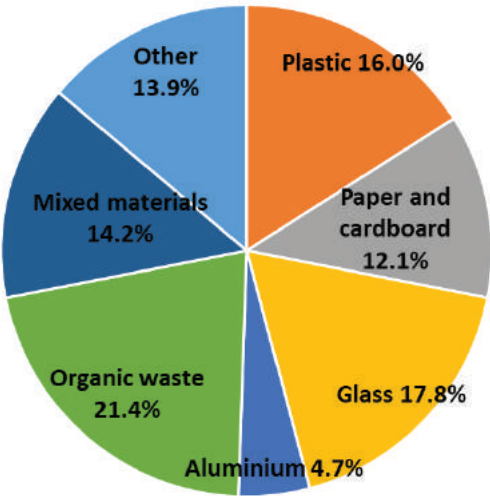
Finally, 2765 waste separation bins and 55,500 biodegradable bags were acquired and provided to citizens. The timing of distribution was critical, as it needed to occur shortly after the education sessions but not too long before the implementation of the new waste collection schedule. Given the delays in the availability of the Material Recovery Facility, additional educational sessions may be necessary for citizens before the commencement of the new collection schedule.

The final survey reported that in 2023, citizen produced an average of 129 kg per capita per year, while in 2021, the reported figure was 99 kg per capita per year. However, the measurements in 2023 were made in the winter, and pellet sawdust, ash, and wood waste were found in household waste, which could explain the increase in the amount of residual waste. Further actions will be required to ensure ashes and wood waste are composted instead of disposed of with residual waste.

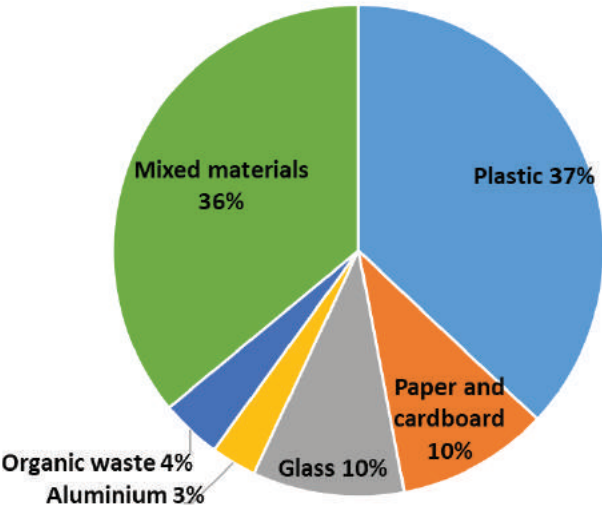
The survey conducted also revealed significant findings: 61% of waste was sorted, while 39% remained unsorted. In Graph 3 below, it's evident that the sorted waste comprises a significant portion of plastics (59%), whereas only 5% of organics were collected by the municipal service. The decrease in organic waste can also be attributed to the timing of the second survey, conducted during winter when a considerable portion of organics consists of grass cuttings.



Graph 1- composition of waste sorted in percentage



Graph 2- Door-to-door waste analysis results at the beginning of the project of 10% of total population



Graph 3- Door-to-door waste analysis results at the end of the project of 10% of total population

The comparative analysis of the results from door-to-door waste analysis (Graph 2 and Graph 3) indicates a notable decrease in organic waste within residual waste, dropping from 21% to 4%, marking a significant achievement of the project, though also due to the fact that there are less organic waste in the winter (grass cuttings) when the second survey took place. There has been a decrease in glass waste by almost half, while plastic waste has surged from 16% to 37%, representing an unexpected outcome. It is worth noting that during this period, minimum wages doubled, potentially leading to increased purchasing power and consumerism. Another plausible explanation is that due to the awareness generated by the project, citizens have begun to dispose of plastic waste in bins rather than littering it in nature. Additionally, it's important to acknowledge that the survey was conducted on a limited number of households, which may result in less reliable data. Nonetheless, it is evident that further education and enhanced supervision from municipal assistants are still necessary to support waste sorting efforts among citizens.

## Material Recovery Facility (MRF)

The presence of an MRF in Gusinje was crucial for launching the new segregated waste collection scheme. However, delays occurred in identifying a suitable municipal unused building, which at the end didn't occur. Consequently, the decision to construct an MRF was made late in the project timeline. Setting up of electro installations and connection of the facility to the electrical network was an additional challenge to address and it required putting in more resources and time. Ideally, identifying and securing the suitable MRF location should have been -addressed during the project initiation phase.



The newly built MRF in Gusinje, ready to receive recyclables



The constructed MRF is a prefabricated barracks spanning 120m<sup>2</sup>, designed for partial recycling and waste material storage.

Additionally, a 120m<sup>2</sup> concrete platform was established for composting organic waste, complemented by the installation of a protective fence. A Hydraulic Press and a Manual Conveyor were also acquired to facilitate the proper treatment of collected segregated waste. This not only offers a more cost-effective option for communal companies but also addresses the challenge of increased transportation costs associated with recyclable waste. The optimal solution involved procuring equipment to compress segregated waste and enable longer-term storage.

Zero Waste Montenegro staff in front of the Hydraulic Press  
(Pressure force: F=120kN (12 tons), Manual hydraulic controls)



## The central role of educational activities



Signboard in Gusinje explaining the concept of a Zero Waste City

Educational activities played a central role in raising environmental awareness in Gusinje: a series of 20 educational workshops to adult citizens, high school and elementary school students as well as local institutions played a pivotal role in familiarising the community with the zero-waste hierarchy and fostering a sense of responsibility towards sustainable waste practices.

11 community waste assistants were recruited and assigned the responsibility of providing waste separation information and guidance to households through door-to-door visits. They all received a one day training workshop.

Additionally, unemployed environmentalists were engaged to educate households, with the potential of securing positions within the waste management company based on merit.

The purpose of the door-to-door visits was to address any doubts or concerns citizens may have had, by elucidating the benefits of the project and their crucial roles in its success. Additionally, flyers were distributed to help residents remember how to correctly separate materials. Information was also accessible on a dedicated page for the project on the Zero Waste Montenegro website.

As a result, an estimated 10% of the population has directly participated in the zero waste educational workshops over 2021 and 2022 and the majority of local community members are now familiar with the zero waste hierarchy and the mechanisms for implementation of the best practices. The impact of waste prevention actions led to 18% reduction in residual waste.

At the end of the project, 50% of company representatives interviewed in the survey declared to be familiar with Zero Waste principles while only 23% of households did. At the beginning of the project, 23% of households stated they were familiar with the concept.

## First step: composting!

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Citizens and businesses have also been educated on food waste prevention and composting through workshops conducted. A brochure on home composting has been created in Montenegrin and Albanian language, to ensure inclusivity. The project's first concrete step entailed providing 150 home composters, free of charge, to households and local restaurants that had expressed interest. This initiative allowed them to initiate backyard composting practices.

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Distribution of home composters to households

One of the key lessons learned for the local teams was that the most effective way to initiate practices of waste reduction and separation was to promote home composting. By doing so, the other materials such as glass and plastics are now easily be separated avoiding contamination by the organics.

Households without gardens or those unwilling to compost at home have been provided with one additional separate garbage bin. These bins will enable centralised composting at the municipal level, utilising the grounds of the MRF.

Additionally, organic waste from households that do not compost will soon be collected door-to-door by the utility company at least once a week.

Data on the contamination rate of the collected biowaste are not yet available.



## Additional initiatives:

The town's commitment to recognising and celebrating positive local practices was reinforced by supporting existing initiatives. Local milk and juice producers, for instance, received reusable glass bottles, emphasising the importance of minimising single-use packaging. However, the responsibility to implement a local Deposit Refund Scheme or a simple Take-Back scheme was delegated to the producers, potentially leading to uncertainty regarding its successful execution.

Also, in an effort to involve the community in combating the growing landfill issue, three cleanup events were organised throughout 2022, rallying community members to actively participate in keeping Gusinje clean. The local population turned out in great numbers, with participation from schools, ZWAB members, the project team, Gusinje's waste management company, NGOs, sports clubs, and other stakeholders. All three events were successfully organized, and the outcomes were effectively promoted through social media channels.

## Awards to best citizen and business initiatives

To keep local communities engaged in Zero Waste efforts and acknowledge exemplary leadership, awards were provided in Gusinje in the form of 40 grass trimmers for outstanding achievements. This recognition aimed to honour individuals' efforts within their communities. These awards will be distributed to those exhibiting the most conscientious approach to waste reduction and separation.

As of now, Gusinje is in the midst of its transformation. With the groundwork laid for a five-bin kerbside waste collection system, scheduled for completion in early 2024, the municipality is set for a significant leap in sustainable waste management. The commitment to reducing waste is reflected not just in infrastructure improvements but also in the active participation of businesses and citizens. Most relevant stakeholders have been involved in the development of the 5 and 10 years plans as it was important to incorporate all inputs provided by various stakeholders representing different sectors, institutions, groups. The Zero waste city plans were approved during a ZWBA meeting.

There is unfortunately not yet data available on the costs of the new system compared to the old one, which would help demonstrate the financial viability of the new system. We expect to revise this case study at the end of 2024 with the relevant data. The municipality together with the waste management public company of Gusinje are solely responsible for the continued funding of the system.



The set of 5 waste separation bins per household in Gusinje



Close-up of a citizen holding a flyer explaining the waste separation in Gusinje

The Zero Waste Plan for Gusinje which outlines both short-term and long-term waste management strategies will serve the municipality and the local public utility company to plan for the years ahead. The plan outlines goals such as continued dedication to waste reduction, enhanced sorting practices, legislative improvements in line with zero-waste priorities, and prioritising the use of future funds effectively.

As Gusinje navigates the path towards a zero-waste future, the lessons learned, and the experiences gained will undoubtedly contribute to the broader conversation on sustainable waste management practices in Montenegro and further.

98.6% of Gusinje households and all companies say they would support the local self-government in its decision to become a Certified Zero Waste municipality.

At the time of writing this case study, the city of Kotor has expressed keen interest in embarking on its Zero Waste journey, while the cities of Bar and Tuzi are commencing door-to-door waste separation efforts.



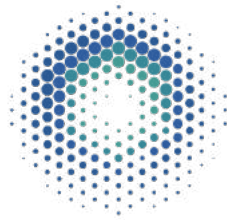


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REGIONALNA RAZVOJNA AGENCIJA  
Bjelasica, Komovi & Prokletije



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