

Lviv, Ukraine

GHG reduction potential in Road-to-ZW scenario: 93%

Key statistics (2021)

- Population: 783,065
- Total municipal solid waste generation: 238,965.63 tonnes/year
- Per capita waste generation: 0.84 kg/day
- Waste collection: 11% separation collection
- Waste diversion rate: 11%

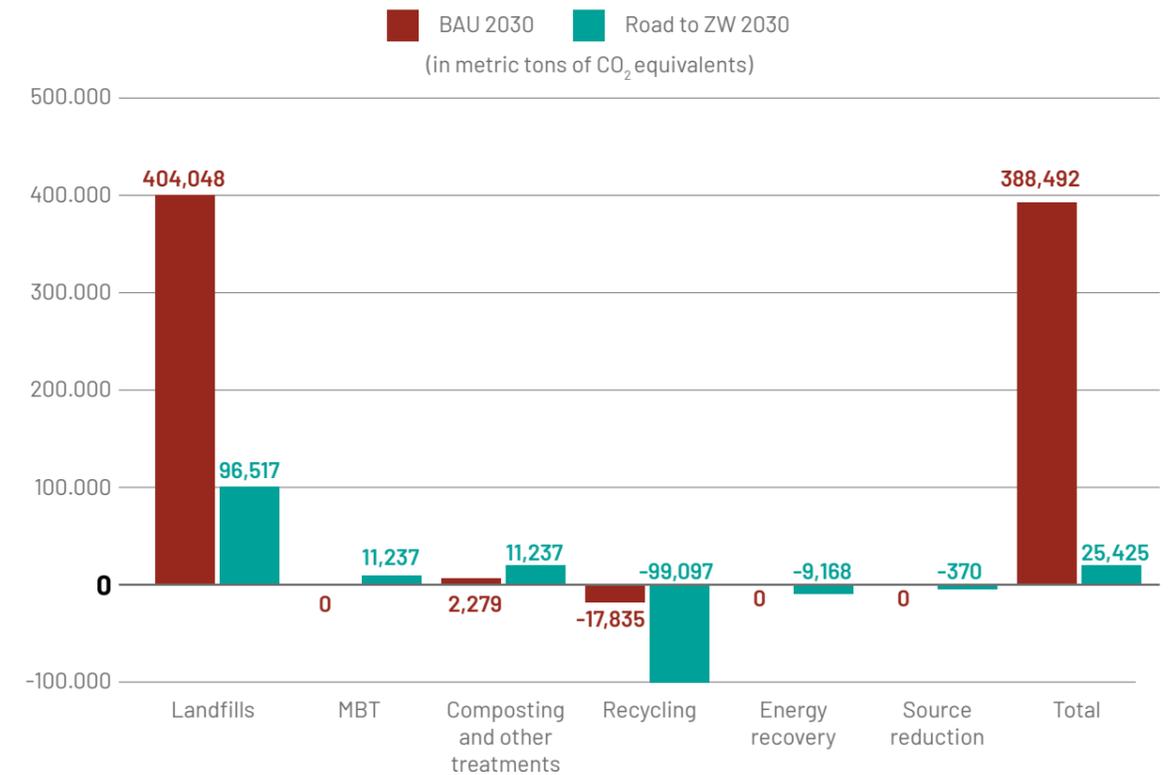
Lviv is the cultural, economic, and business center of Western Ukraine. With a population of 783,065, more than 2.5 million tourists visiting each year, and a growing number of Information Technology companies making homes in the City, Lviv's waste toll is on the rise. Single-use items and organic waste from touristic sites, and increased amounts of e-waste add challenges to a Medieval downtown not equipped to organize waste collection. The Russian war in Ukraine also made Lviv the major shelter for refugees and hub for humanitarian aid as well, adding an enormous amount to its waste footprint.

As with other cities in Ukraine, Lviv lacked a sound waste collection and recovery system. A major fire that took place in Lviv Grybovychi Landfill in May 2016, however, changed how the city looked at its waste problem. The landfill was permanently closed after the fire took four lives, which prompted the city to commit to becoming a zero waste city due to the high cost of sending waste to other cities' or regional landfills. The tragedy brought political and public attention to waste management and sparked a reform in the waste sector.

As the first non-EU city to participate in the [Zero Waste Cities certification program](#), the Lviv government is making moves to improve its waste management system; in September 2020, the City instituted source-separated collection for organics, with a goal to divert 80% of kitchen waste and 100% green waste. Together with waste management companies, recyclables wholesalers and informal waste pickers, Lviv aims to increase separate collection of recyclable materials and implement pilot EPR schemes. The City plans to replace single-use tableware and food takeout boxes with reusables and establish a network of drinking fountains in public places. Lviv is also pioneering an effort to replace sanitary products, such as diapers and menstrual products, with reusable equivalents. Special emphasis is put on repair and refurbishing businesses especially for electronic and electric appliances, apparel and footwear, accessories, and furniture. However, the plan also raises concerns by including a construction project for an MBT plant, which will produce refuse-derived fuel to be burned in cement kilns by 2024.

Lviv in 2030 – Business as Usual vs. Road to Zero Waste

The below chart shows estimates for annual GHG emissions associated with waste management in Lviv by 2030 in two scenarios: 1) Business as Usual (BAU) based on the data from 2021, and 2) Road to Zero Waste based on consultations with local groups including Zero Waste Lviv. Assumptions that informed each scenario are detailed in the table below.



Treatment	BAU 2030	Road-to-ZW 2030
Landfill	297,433 tonnes of municipal solid waste landfilled The source of all GHG emissions in Lviv's waste system	158,480 tonnes of municipal solid waste landfilled (47% reduction). Landfill gas emissions drop by 76% but are still the largest emissions source
Incineration	none	none
Composting & other treatments	10,431 tonnes of organic waste is composted	104,190 tonnes of organic waste is composted and 158,480 tonnes of residuals are sent to MRBT
Recycling	26,708 tonnes through voluntary efforts	71,271 tonnes, a 2.7 times increase, through source separation. This results in GHG reductions greater than the total landfill emissions
Energy recovery	none	none
Source reduction	none	Voluntary programs avoid 310 tonnes of plastic waste
Overall diversion rate	11%	67%

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Key takeaways

- 1** Currently, the biggest source of GHG emissions in Lviv is methane from landfilled organic waste, as most waste is sent to a landfill, with minimal efforts at recycling or composting.
- 2** In the Road to Zero Waste scenario, Lviv would achieve an increase in overall diversion rate from 11% to 67%, avoiding annual GHG emissions by 63,910 tonnes CO₂e in 2030.
- 3** This approach would reduce annual residual waste by 47%, landfill methane emissions by 76%, and overall GHG emissions by 93%, compared to the Business as Usual 2030 scenario.
- 4** The Road to Zero Waste scenario includes diverting 80% of organic waste from landfills through composting, recycling (80% of paper, cardboard, glass, and metal, 15% of plastic and textiles, and 1.5% of electronics and other), moderate SUP bans, and avoiding incineration.
- 5** Grassroots organizations including Zero Waste Lviv assure the city that the Road to Zero Waste can be achieved through joint efforts of the city council, citizens including marginalized waste pickers, businesses, NGOs, and social entrepreneurs.

Recommendations

- **Continue with the separate collection of organic waste and composting.**
- **Ban single-use plastic.** Continue and expand bans on single-use items such as bags, cups, bottles, to-go containers, cutlery, etc.
- **Provide incentives for hotels, restaurants, and cafés to set up reusable cups, tableware, packaging for drinks and food, to-go and deliveries, and festivals.**
- **Promote the tap water and water fountains in public area to reduce the use of bottled water.**
- **Promote packaging-free shelves in supermarkets and outdoor markets and bring-your-own systems (BYO).**
- **Develop a program on reusable nappies, early potty training, reusable menstrual products.**
- **Financial support program support for repair businesses, local second-hand stores and markets, and other facets of the sharing economy**



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Written by: Iryna Myronova. This case study was prepared as part of the report, “Zero Waste to Zero Emissions: How Reducing Waste is a Climate Gamechanger (GAIA, 2022).” Please visit www.no-burn.org/zerowaste-zero-emissions to access the full report and detailed notes on data and methods.