

Advancing sustainable municipal waste management in Ukraine

Lviv agglomeration case study



Waste containers in Lviv, Ukraine.

The Lviv agglomeration, one of the most important territorial and economic areas in western Ukraine, has the potential to become a national showcase for EU-aligned municipal waste management reform.

As the agglomeration's largest municipality and administrative centre, the city of Lviv has advanced further than most Ukrainian municipalities in implementing modern waste management practices, including source separation of biowaste, the establishment of a municipal composting facility, and the collection of hazardous household waste. Supported by the European Bank for Reconstruction and Development (EBRD), the city has also rehabilitated the Hrybovychi landfill and is nearing the completion of a mechanical-biological treatment (MBT) plant, expected to become fully operational in 2026.

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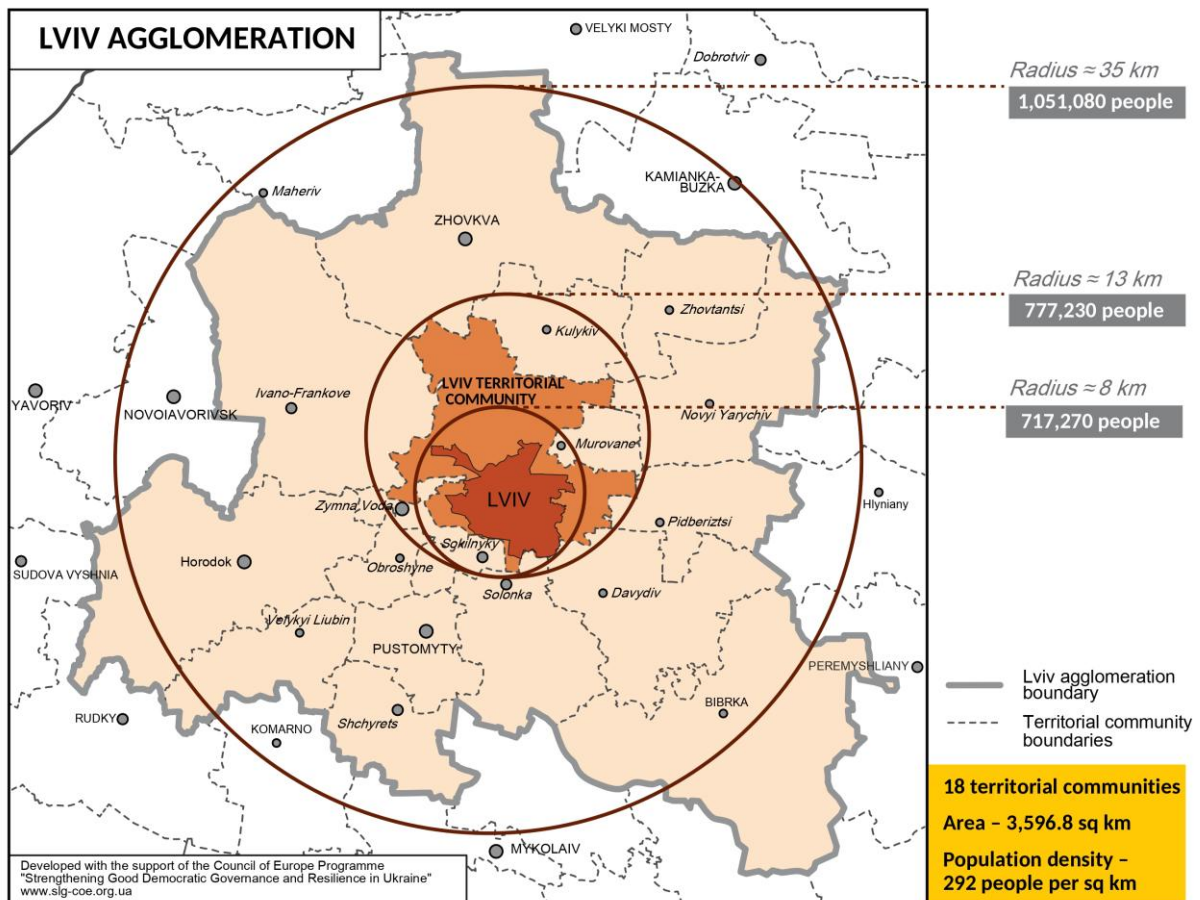
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Figure 1. Boundaries of the Lviv agglomeration.¹



While the MBT plant has the potential to catalyse wider regional cooperation, its success depends on integrated planning and aligning upstream separate collection systems with downstream residual disposal to avoid technological lock-in. For this integrated system to be truly sustainable, technical infrastructure must be matched by social modernisation. To this end, the agglomeration’s municipal waste management strategy must place greater emphasis on gender and social inclusion, particularly through support for informal waste pickers and improving the accessibility and inclusiveness of waste services.

The path forward is clear: the Lviv agglomeration must move from fragmented collection-and-disposal practices towards a fully integrated waste management system based on the principles of waste prevention and the EU waste hierarchy. This shift should be supported by stronger inter-municipal cooperation, economically sustainable tariffs, modern sorting and biowaste treatment infrastructure, and reliable access to environmentally compliant residual waste disposal capacity.

¹ Translated from: Lviv Regional State Administration, Council of Europe, [Стратегія розвитку Львівської агломерації до 2027 року](#), 6, 14 December 2023.

State of play

The Lviv agglomeration encompasses the city of Lviv and 17 surrounding territorial communities within a 30-kilometre radius of the city's outer boundary, boasting a combined population of around 1.05 million people. This makes the agglomeration a logical focal point for the implementation of integrated, multi-level municipal waste management reform.

Municipal waste management across the agglomeration remains constrained by infrastructure gaps and uneven service coverage. In 2022 and 2023, communities within the agglomeration generated on average more than 1.8 million tonnes of class I-IV waste, accounting for 66 to 75% of the total waste generated in the region. At the same time, only 4 of the 18 territorial communities were fully covered by centralised municipal waste collection services. The remaining communities experienced varying degrees of service gaps, contributing to illegal dumping and weak contractual discipline.

The composition of municipal waste in Lviv underlines the importance of organics and dry recyclables. Over 40% of a typical Lviv household's mixed waste bin consists of organic matter by weight, while paper, cardboard, plastics, glass and metals make up another sizeable fraction. This waste composition strongly supports a system based on source separation, composting and recycling, rather than continued dependence on mixed waste collection and landfilling.

The city of Lviv has already introduced a separate collection scheme covering four municipal waste streams, with dedicated containers for biowaste, plastics, glass and mixed municipal waste. However, the recently adopted Lviv Region Waste Management Plan until 2034 still leaves room for more systematic waste prevention measures. These could include targets to reduce per-capita waste generation by a defined percentage based on weight, the promotion of home composting in rural areas to cut organic waste, and working with retailers to reduce packaging and single-use plastics. Such measures would align with EU policy developments, including recent revisions to the Waste Framework Directive aimed at boosting circularity.²

Across the agglomeration, implementation remains highly uneven. Some communities report no population coverage for separate collection, while others have achieved relatively high coverage. Infrastructure also varies significantly, with certain municipalities relying primarily on PET bottle nets and glass collection containers. According to the Lviv Region Waste Management Plan, the agglomeration is expected to be equipped mainly for only two streams – mixed waste and recyclables and PET – insufficient for a system genuinely aligned with the EU waste hierarchy.

The National Waste Management Plan, which runs until 2033, sets ambitious targets for increasing recycling rates. These include at least 10% of municipal waste by mass by 2025, 20% by 2030, and 70% recycling and

² European Commission, [Revised Waste Framework Directive enters into force to boost circularity of textile sector and slash food waste](#), 16 October 2025.

other recovery of non-hazardous construction and demolition waste by 2033.³ Achieving these targets will require a dramatic expansion of sorting and recycling infrastructure both in the city of Lviv and across the Lviv region, which currently relies on relatively basic waste management systems.⁴

The wider waste management system across the Lviv region comprises 22 municipal landfills and 2 dumpsites, most of which lack liners, landfill gas capture systems, and leachate treatment. The Lviv Region Waste Management Plan aims to consolidate this fragmented infrastructure into a network of seven modern regional waste treatment facilities – six sanitary landfills and one MBT plant – organised by waste cluster⁵ and compliant with the EU Landfill⁶ and Industrial Emissions⁷ Directives. The key policy challenge is ensuring that this planning framework translates into realistic and adequately resourced implementation.

The municipal composting station in Lviv remains significantly underutilised relative to its design capacity, despite biowaste representing the largest fraction of municipal waste. The region should therefore assess whether the most sustainable approach is to intensify the use of Lviv's existing composting capacity, develop additional cluster-level composting facilities for green waste, or introduce anaerobic digestion for selected biodegradable streams. This decision should be guided by logistics, climate performance and economic feasibility.

Financing to solve 'garbage crisis' and MBT plant

Following the 2016 disaster at Hrybovychi landfill – when a slope collapse and fire led to the deaths of three firefighters and one municipal enterprise worker⁸ – the site was closed for remediation. In the interim, municipal waste from Lviv had to be transported to landfills in other parts of Ukraine, triggering what became widely known as the city's 'garbage crisis'.

In response, the Lviv municipal enterprise Zelene Misto signed financing agreements in 2018 with the EBRD⁹ and the Eastern Europe Energy Efficiency and Environment Partnership (E5P) Fund for a EUR 35 million municipal waste programme. The package included a EUR 20 million EBRD loan, a EUR 10 million grant from the E5P Fund, and EUR 5 million from the Climate Investment Funds' Clean Technology Fund. The local contribution amounted to EUR 6.75 million, backed by a guarantee from Lviv City Council,

³ Cabinet of Ministers of Ukraine, [Про затвердження Національний план управління відходами до 2033 року](#), 27 December 2024.

⁴ Twenty-two municipal landfills and two dumpsites operate on 147 hectares across the Lviv region and more than 300 illegal dumpsites are recorded each year, posing risks to the environment and public health. Most of these facilities do not meet EU standards; see: Lviv Regional State Administration, [Про затвердження Регіональний план управління відходами у Львівській області до 2034 року](#), 143, 145, 15 January 2026.

⁵ Ibid., 292.

⁶ European Commission, [Landfill waste](#), accessed 29 April 2026.

⁷ European Commission, [Industrial and Livestock Rearing Emissions Directive \(IED 2.0\)](#), accessed 14 April 2026.

⁸ Kateryna Sadlovska, Olean Danylo, [5 років після обвалу на Грибовицькому сміттєзвалищі. На Львівщині вшанували загиблих](#), Suspilne Lviv, 31 May 2021.

⁹ European Bank for Reconstruction and Development, [GrCF - Lviv Solid Waste](#), accessed 21 April 2026.

bringing the total programme cost to EUR 41.75 million. Additional technical assistance for feasibility studies was provided by the French government.¹⁰

Once operational, the MBT plant will mechanically sort mixed municipal waste, recover recyclable materials, and biologically treat the organic fraction through biological stabilisation and biodrying processes. Only the residual 15 to 35% is expected to require landfilling. The plant will also produce refuse-derived fuel (RDF) from high-calorific waste fractions for co-processing in cement kilns, likely in western Ukraine, as an alternative to coal.

At the same time, the region should avoid becoming locked into a single technological pathway. Alternative waste treatment options should therefore continue to be assessed pragmatically and in line with the EU waste hierarchy.

Although the plant is almost complete, an updated environmental impact assessment (EIA) for the MBT plant was carried out in February 2026.¹¹ During public consultations, civil society organisations reiterated many of the concerns¹² previously raised during the original EIA process in 2019.¹³ The main issues include a lack of clarity on the long-term utilisation of RDF and the associated risk that RDF could ultimately be disposed of in landfills. There were also concerns over emissions, the treatment of biodegradable waste, and the facility's proximity to wastewater treatment infrastructure.

Construction of the MBT plant has also been delayed by a dispute between the city of Lviv and the Polish contractor Control Process S.A. On 7 April 2026, the contract was officially terminated, and the city is currently seeking a new contractor with the aim of completing the plant in early 2027.¹⁴ According to public reporting, multiple court cases involving both the city and Control Process are ongoing. As the EBRD oversaw the tender procedure in 2020,¹⁵ it has also been linked to aspects of the dispute. A similar MBT project is currently being considered in Khmelnytskyi, with Control Process reportedly securing the tender procedure.¹⁶

¹⁰ Anton Usov, [EBRD and international donors improve solid waste management in Lviv](#), European Bank for Reconstruction and Development, 1 June 2018.

¹¹ Lviv District State Administration, [Оголошення про початок громадського обговорення звіту з оцінки впливу на довкілля та звіт з оцінки впливу на довкілля стосовно планованої діяльності «Операції з управління відходами на механіко-біологічному комплексі на вул. Пластовій, 13 у м. Львові \(вул. Пластова, 13, м. Львів, Львівського району, Львівська область\)» \(реєстраційний номер справи – 14481\)](#), 25 February 2026.

¹² CEE Bankwatch Network, [Advancing Sustainable Municipal Waste Management in Ukraine: Lviv Agglomeration](#), 21 April 2026.

¹³ Environment-People-Law, [Зауваження та пропозиції до Звіту з оцінки впливу на довкілля щодо планованої діяльності із будівництва механіко-біологічного комплексу з перевантаження та переробки твердих побутових відходів у м. Львові на вул. Пластовій, 13](#), 13 February 2019.

¹⁴ Victoria Prikhod, [Запуск сміттєпереробного заводу у Львові перенесли на 2027 рік](#), Espresso.Zakhid, 30 April 2026.

¹⁵ Ukrinform, [EBRD approves contractor to build waste processing plant in Lviv](#), 23 October 2020.

¹⁶ Ukraine Business News, [A Polish company that previously failed to build a waste-processing plant in Lviv has won a new tender to construct a similar facility in Khmelnytskyi](#), 9 April 2026.

Waste-to-energy plans

The State Agency for Restoration and Infrastructure Development of Ukraine¹⁷ has proposed a solid-fuel combined heat and power (CHP) network development programme based on RDF and solid recovered fuel (SRF) as part of a broader innovative solid waste management system for heat and electricity production. The programme envisages implementation in three to seven regions, each based on a full-cycle model combining waste sorting, RDF and SRF production, and CHP generation facilities. Potential financiers include the EBRD, KfW, the Economic Development Cooperation Fund (EDCF), the International Finance Corporation (IFC), and private investors. In mid-2025, the South Korean global trading and energy corporation POSCO International announced its interest in developing a 12-megawatt (MW) waste-to-energy plant in Odesa.¹⁸

While the programme description states that the EBRD is considering support within the framework of circular economy development in Ukraine, the proposed approach is difficult to reconcile with broader circular economy objectives. The programme is unlikely to address Ukraine's immediate heating and electricity needs given the long construction timelines, high capital costs, and uncertainty surrounding both the quantity and calorific value of RDF feedstock.

Waste-to-energy infrastructure is highly capital-intensive and raises significant environmental concerns, particularly regarding emissions. Such projects not only require rigorous feasibility assessments, but also pose regulatory and financial risks linked to the EU Emissions Trading System (ETS). CHP plants using RDF above the ETS capacity threshold – commonly more than 20 megawatts (MW) of total rated thermal input, with aggregation rules applying – fall under the ETS as fuel combustion installations, potentially exposing operators to carbon costs associated with the fossil fraction of RDF.¹⁹ In addition, municipal waste incinerators have been required to monitor and report emissions under the ETS since 1 January 2024²⁰ and may become fully subject to the ETS Emissions Trading System from 2028, depending on the outcome of the European Commission's assessment.²¹

More broadly, current EU policy discourages large-scale incineration in favour of recycling, waste prevention and circular economy development. Any waste-to-energy project would therefore need to demonstrate that only non-recyclable residual waste streams are being used for energy recovery. For these reasons, public investment in RDF-based waste-to-energy capacity should not be considered fully aligned with the objectives of the EU waste hierarchy.

¹⁷ DREAM Public Investment Program, [Програма розвитку мережі ТЕЦ на твердому паливі \(RDF/SRF\)](#), 13 August 2025.

¹⁸ The Odessa Journal, [South Korean Posco International plans to build an RDF-powered CHP plant in Odessa for \\$106 million](#), 24 April 2025.

¹⁹ European Commission, [Guidance on Interpretation of Annex I of the EU ETS Directive \(excl. aviation and maritime activities\)](#), 4 December 2024.

²⁰ European Commission, [Scope of the EU ETS](#), accessed 20 April 2026.

²¹ Gregor Erbach, Nela Foukalová, [Review of the EU ETS 'Fit for 55' package](#), European Parliamentary Research Service, 31 May 2023.

Gender equality and social inclusion

Efforts have been made to involve women in Lviv's emerging waste management initiatives. As a result, women now play a prominent role in the city's waste education campaigns and eco-volunteer networks.²² However, as numerous international studies have shown,²³ gender-related vulnerabilities are often most acute within the informal waste sector.

In 2021 and 2022, the Ukrainian organisations Zero Waste Lviv and Fama Research Agency conducted a first-of-its-kind study of informal recyclers in Lviv, locally known as *zbyrachi* (waste pickers). The research found that waste pickers are typically middle-aged or older individuals with limited alternative income opportunities. They face significant occupational risks, including exposure to sharp objects and toxic substances while handling waste without protective equipment, alongside widespread social stigma. Crucially, they operate outside formal legal and social protection systems, with no health insurance, pension contributions, or official recognition of their contribution to recycling activities.²⁴ The study also highlighted the need for a more systematic assessment of gender dimensions and the role of vulnerable groups within the waste management sector of the Lviv urban territorial community.

The current transition presents both risks and opportunities for advancing gender equality and social inclusion. On the one hand, modernisation of the waste system – including sealed containers, restricted access collection sites, mechanised sorting centres and stricter landfill controls – may displace informal pickers, including women, by removing their source of income without providing alternatives or compensation. On the other hand, the transition could create pathways towards safer and more stable employment. The study recommends integrating informal waste pickers into the formal waste management system through employment opportunities as sorting line workers, composting facility operators and site caretakers. According to a survey conducted as part of the study, 53% of interviewed waste pickers in Lviv indicated that they would accept formal employment in waste sorting if given the opportunity.

In Lviv, the EBRD's Green Cities Framework supports Phase I of the Hrybovychi landfill rehabilitation and the construction of the MBT plant. However, project-specific environmental and social documentation is not publicly available on the relevant project page (49437), limiting external assessment of social and gender indicators or targeted inclusion measures associated with the loan.²⁵ During wartime, under the

²² Zero Waste Lviv, [Інформаційний дайджест: Діяльність та проєкти Zero Waste Lviv впродовж 2022 року](#), 30 December 2022.

²³ Anna Barford, Annabel Beales, [Decent work opportunities and challenges in recycling](#), International Labour Organization, 3 April 2025; United Nations Environment Programme, [Gender and Waste management](#), accessed 20 April 2026; Global Partnership for Results-Based Approaches, World Bank Group, [How to close gender gap with results-based financing in urban projects](#), 25 March 2020; Office for Gender Equality and Poverty Reduction, Governance and Peacebuilding Department, Japan International Cooperation Agency, [Reference Material for Gender Mainstreaming in the Environmental Management Sector](#), January 2023.

²⁴ Fama Research Agency, Zero Waste Lviv, [Дослідження складу та ролі групи неформальних збирачів вторсировини в управлінні відходами міста Львова](#), June 2023.

²⁵ European Bank for Reconstruction and Development, [GrCF - Lviv Solid Waste](#).

resilience and livelihoods framework, EBRD emergency liquidity operations (53825²⁶ and 56328²⁷) have incorporated technical cooperation measures aimed at strengthening environmental, social, health and safety management, as well as stakeholder engagement capacity. Public disclosure for one of these operations (56328) explicitly refers to training on measures to combat gender-based violence and harassment, alongside continued environmental and social monitoring through annual reporting.

Beyond the informal sector, waste management reform takes on a broader social dimension. Waste services should be accessible, affordable and beneficial to all residents – including women and men, children, older persons, and people with disabilities – through barrier-free infrastructure and inclusive service design. This includes safe and universally accessible collection points, with adequate lighting, non-slip surfaces, ramps, curb cuts, sufficient space for wheelchairs and prams, and container lids or handles usable by people with limited physical strength. It also requires fair and transparent tariff structures that factor in social vulnerability, including the lower average income levels often faced by female-headed households.

Inclusive communication is equally important. Information should be accessible through clear pictograms, simple language, and multiple formats, including large print and digital channels. Waste service models should also accommodate residents requiring additional support, including assisted or door-to-door collection for mobility-limited households, alongside accessible feedback and grievance mechanisms.

Recommendations for the Lviv region

Overall approaches to sustainable municipal waste management

- **Prioritise projects supporting sorting, reuse, recycling parks, buy-back systems, and the processing of construction and demolition waste, including war debris**, instead of concentrating almost exclusively on downstream mixed-waste treatment. Such an approach would better support circular economy development while reducing pressure on landfills and MBT capacity.
- **Scale up separate collection of biowaste and hazardous household waste across the entire Lviv region**, expand sorting and composting capacity, secure compliant residual waste disposal through regional arrangements reflecting waste cluster specialisation, and progressively close non-compliant dumpsites. This integrated approach should remain the core priority for the region's waste management transition.

²⁶ European Bank for Reconstruction and Development, [City of Lviv emergency liquidity loan under RLF](#), accessed 21 April 2026.

²⁷ European Bank for Reconstruction and Development, [RLF - Lviv Emergency Liquidity II](#), accessed 21 April 2026.

- **Mainstream social inclusion and gender equality into the modernisation of the waste management sector** to ensure that the transition towards a circular economy also contributes to a more inclusive and equitable local economy.

Potential financing considerations

- **Subject the construction of the six new EU-compliant landfills envisaged under the Lviv Region Waste Management Plan to a rigorous feasibility assessment**, particularly given the high capital costs involved and the current lack of sufficiently robust data regarding future residual waste volumes after the MBT plant becomes operational.
- **Consider dedicated waste-to-energy investments only after a rigorous feasibility assessment** and only for genuinely non-recyclable residual waste streams, given the significant capital costs, environmental concerns, and growing EU regulatory and carbon-cost risks.