Energijska izraba odpadkov Maribor

Presentation document

April 2026

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Project:	ENERGY RECOVERY FROM WASTE MARIBOR
Abbreviation:	EIOM
Project type:	Development project
Project owner:	EIOM, d. o. o.
Key stakeholders:	Energetika Maribor, d. o. o. in Javno podjetje Snaga, d. o. o.
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MESTNA OBČINA MARIBOR

ENERGETIKA MARIBOR

SNAGA

JAVNI HOLDING MARIBOR

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Date:	April 2026

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1. Introduction

The Waste-to-Energy Maribor Project (EIOM) is a development infrastructure project aimed at the long-term regulation of non-recyclable municipal waste management, while simultaneously utilizing its energy potential for the production of heat and electricity. The project is being implemented within a special purpose vehicle (SPV), the establishment of which enables a clear separation of responsibilities, transparent management of the investment, and long-term operation of the facility. It is based on cooperation between Energetika Maribor d. o. o. and Snaga d. o. o., two key public companies in the Municipality of Maribor. The project is designed as a public infrastructure facility with a strong local and regional role. Its content is derived from several years of expert analyses, investment documentation, and strategic development guidelines. EIOM is positioned within the context of the circular economy and sustainable energy as one of the key flagship projects.

The main purpose of the EIOM project is to ensure safe, environmentally acceptable, and energy-efficient treatment of the portion of municipal waste that, despite advanced separate collection and recycling systems, cannot be materially recovered. The project represents the final missing link in the waste management system, enabling stable and predictable treatment of the combustible residual fraction. At the same time, EIOM serves as an important local source of heat and electricity, which is integrated into the district heating system of the City of Maribor. This gradually reduces dependence on natural gas and other fossil fuels. The project has a strong systemic role, as it connects the municipal and energy sectors.

The project does not replace recycling, but rather deals exclusively with the residual waste remaining after mechanical and biological treatment

2. Organisational Structure of the Project Company EIOM, d. o. o.

The management and implementation of the EIOM investment will be carried out through a newly established special purpose vehicle (SPV), EIOM d. o. o., which will act as the project implementation entity and will be responsible for coordinating all activities from the preparation phase of documentation through to the start of operation.

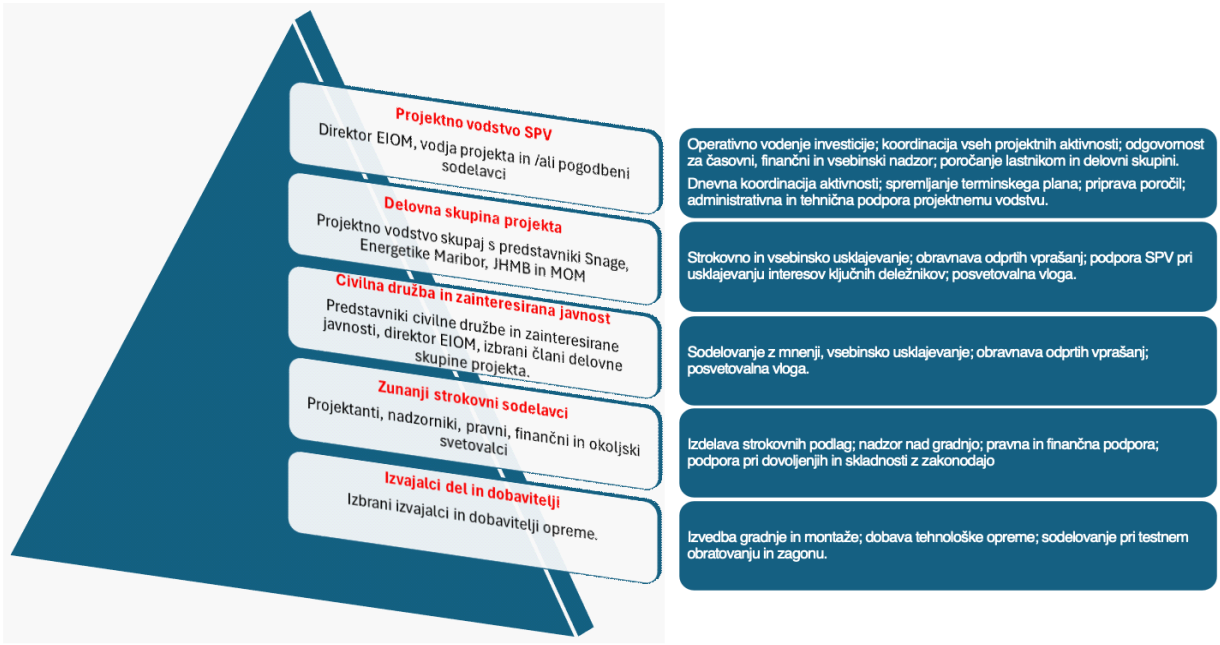
The SPV will serve as the central operational body of the project and will be responsible for:

- managing the investment process,
- stakeholder engagement and implementation of communication and marketing activities,
- commissioning and supervision of the preparation of project and other technical documentation,
- managing permitting procedures,
- concluding contracts with contractors and suppliers,
- managing the financial execution of the investment,
- monitoring the schedule, financial, and substantive progress of the investment.

The working group will have an advisory and coordination role and will:

- monitor project progress,
- address key open issues,
- ensure alignment of the project with local development goals and policies,
- provide expert opinions and recommendations.

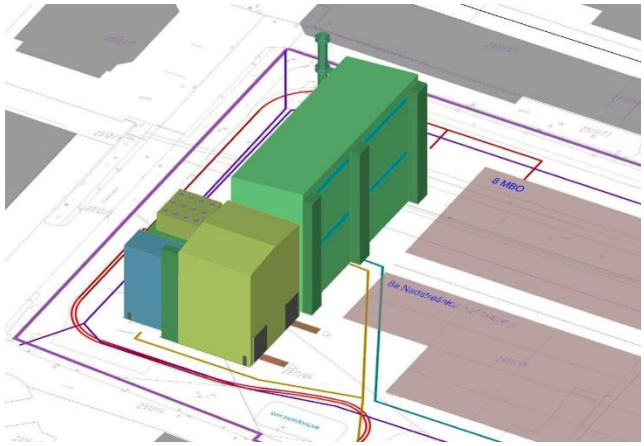
For efficient investment management, the following standard project structure will be established, as shown in the diagram below.

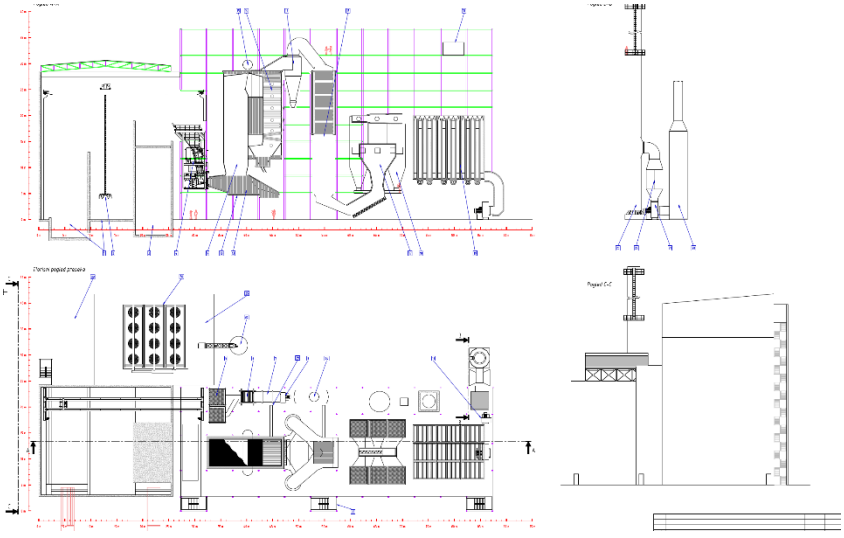


3. Technical Data

The EIOM project is designed as a modern waste-to-energy facility with combined heat and power (CHP) production. The plant will operate continuously for most of the year, with an estimated operating time of approximately 8,000 hours annually, enabling stable energy production. The technical parameters are defined based on the available quantities of combustible waste fractions in the region and the heat demand of the district heating system. The facility achieves high overall energy efficiency and meets the criteria for classification as a recovery operation (R1). The planned processes are based on proven technologies widely used across Europe. The operational design allows flexibility in response to seasonal and daily variations in heat demand.

- **Annual treatment capacity:** 50,000 tonnes of waste
- **Annual operating time:** ~8,000 hours
- **Thermal input capacity: ~28.8 MW**
- **Nominal heat output for district heating**: ~17.3 MW
- **Annual production:**
    - Heat: ~61 GWh
    - Electricity: ~40 GWh
- **Gross energy efficiency:** >77%
- **R1 factor:**
    - BFB technology: 0.84
    - Grate technology: 0.82
    - (legal minimum: R1 > 0.65)





4. Location

The Tabor 13-P location in the Municipality of Maribor was selected based on a detailed comparative analysis of several alternative sites. The assessment included spatial, environmental, logistical, ownership, and implementation criteria, as well as the long-term functional suitability of the location. The selected site enables direct integration with existing municipal infrastructure, in particular the waste sorting facility, thereby reducing transport burdens. The location complies with applicable spatial planning documents and does not interfere with residential areas. It also allows construction while fully respecting environmental requirements and ensuring the protection of public health. The available area additionally enables further development of a circular economy centre.

- **Selected location: Tabor 13-P, Municipality of Maribor**
- **Selected based on a comparative analysis of 5 alternatives**
- **Key advantages of the location:**
    - Compliance with the municipal spatial plan (OPN) and designated land use
    - Public ownership of the land
    - Direct proximity to the existing sorting facility
    - Minimal transport flows
    - Absence of residential areas within the impact zone
    - Available area: ~4.4 ha

5. Environmental Aspects

The EIOM project is designed in accordance with Best Available Techniques (BAT) and strict environmental requirements of the European Union and national legislation. Special emphasis is placed on multi-stage flue gas cleaning, which ensures low emissions of particulate matter, nitrogen oxides, acidic gases, and other pollutants. The design emissions are significantly below the legally permitted limit values. The facility does not generate process wastewater discharges into the environment. Environmental impacts have been comprehensively assessed in technical studies, the Environmental Impact Assessment (EIA), and supporting documentation. The project also contributes to reducing methane emissions by replacing waste landfilling.

- **Facility designed in line with BAT and the Industrial Emissions Directive**
- **Multi-stage flue gas cleaning (baghouse filter, acid gas neutralisation, activated carbon, SNCR/SCR)**
- **Design emissions significantly below regulatory limit values**
- **No process wastewater discharges**
- **Particulate emissions < 1 mg/Nm^3**
- **Accounted for favourable local meteorological conditions (very low frequency of calm wind conditions)**
- **Biogenic carbon content in fuel: ~50%**

Design values of the EIOM facility:

Description	Unit	Cleaning
Fuel	kg/h	6.250
Combustion air from the fuel storage area	Nm^3/h	40.000
Negative pressure (in the fuel storage area)	mbar	-0,10
Fresh water for wet flue gas cleaning needs	t/h	Not required

Description	Unit	Cleaning
Additional fresh water	t/h	32,1
Hydrated lime– $Ca(OH)_2$	kg/h	Not required
TMT 15	kg/h	Not required
$FeCl_3$	kg/h	Not required
PE	kg/h	Not required
NH_4OH (25%)	kg/h	13,0
Activated carbon	kg/h	25
Sodium bicarbonate	kg/h	200

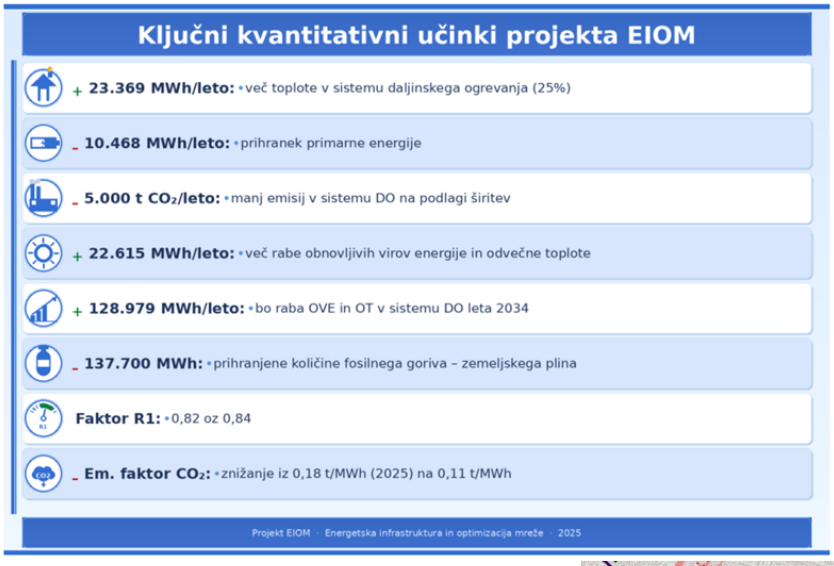
Description	Unit	Wet cleaning	Cleaning
Wastewater	m^3/h	0,8	Not required
Chloride concentration	g/l	40	-
Neutralised sludge from wet flue gas cleaning and ash treatment (without centrifuge)	kg/h	1.400	Not required
Neutralised sludge from wet flue gas cleaning and ash treatment (without centrifuge)	kg/h	60	60
Boiler and cyclone ash	kg/h	560	560
Filter ash (contains formed salts and excess soda)	kg/h	250	408

Description	Unit	Cleaning
Cleaned flue gases from the chimney		
mass flow rate	Nm^3/h	48.000
temperature	°C	160
O2	% vol	4,9
CO2	% vol	16,6
H2O	% vol	8,5
N2	% vol	68,8
HCl	mg/Nm^3	<1
HF	mg/Nm^3	<0,5
SO2	mg/Nm^3	<20
prah	mg/Nm^3	<1
NOx	mg/Nm^3	<30
TOC	mg/Nm^3	-
CO	mg/Nm^3	-
NH_3	mg/Nm^3	-
Mercury (Hg)	mg/Nm^3	-
Cd + Tl	mg/Nm^3	-
PCDD/F	ng/Nm^3	-
PCDD/ F + dioxin-like PCBs	ng/Nm^3	-
Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V	mg/Nm^3	-

6. Energy and Climate Impacts and Effects on the District Heating System

The EIOM project makes an important contribution to reducing primary energy consumption and greenhouse gas emissions. By recovering energy from non-recyclable waste, a significant portion of natural gas used in the district heating system is replaced. A part of the incoming fuel consists of a biogenic fraction, which is classified as a renewable energy source in accordance with the applicable methodology. The project delivers measurable annual reductions in CO_2 emissions and improves the emission factor of produced heat. In this way, it directly contributes to decarbonisation targets at both local and national levels. These effects are supported by calculations prepared within professional analyses.

The EIOM project is a key development element of the Maribor district heating (DH) system. The new heat source enables greater diversification of production sources and reduces exposure to price volatility of fossil fuels. A gradual expansion of the district heating network and the connection of new consumers is planned. Within the operational structure, EIOM will assume the role of the base-load heat source, while existing gas-fired units will operate as peak-load and backup sources. This design increases supply reliability and enables optimisation of the overall system operation. The project has a long-term positive impact on the competitiveness of district heating.



7. Investment

The economics of the EIOM project are based on a combination of a regulated waste-to-energy activity and the sale of generated energy. The investment is capital-intensive but designed for long-term stable operation, with key revenue streams linked to the implementation of the mandatory state public utility service for municipal waste incineration, contractual heat sales to the district heating system, and the market-based sale of electricity.

The financial analysis of the project, carried out in accordance with the Uniform Methodology Regulation, in current prices and at a discount rate of 4%, shows a positive net present value of approximately EUR 6.1 million, an internal rate of return of around 4.7%, and a payback period of approximately 19 years. These results confirm the financial sustainability of the project over its entire planned operating lifetime.

In addition to the financial assessment, an economic cost-benefit analysis was also conducted, taking into account broader societal impacts of the investment, such as the reduction of exported combustible waste fractions, reduced landfilling, substitution of fossil fuels in the district heating system, and lower logistics and emission-related costs. The economic indicators are strongly positive, which also justifies the project from the perspective of social benefits and efficient use of public funds.

Costs and revenues are assessed conservatively across all scenarios, without accounting for all potential long-term positive externalities. The project thus contributes to stabilising the costs of waste management and heat supply, reduces exposure to market fluctuations in energy prices, and at the same time generates significant long-term socio-economic benefits in both the local and wider regional environment.

The estimated investment value amounts to:

- **Constant prices: EUR 89.9 million**
- **Current prices: EUR 102.83 million**

Financial analysis:

- Positive NPV (~EUR 6 million)
- IRR: ~4.7%
- Payback period: ~19 years

Revenues are based on:

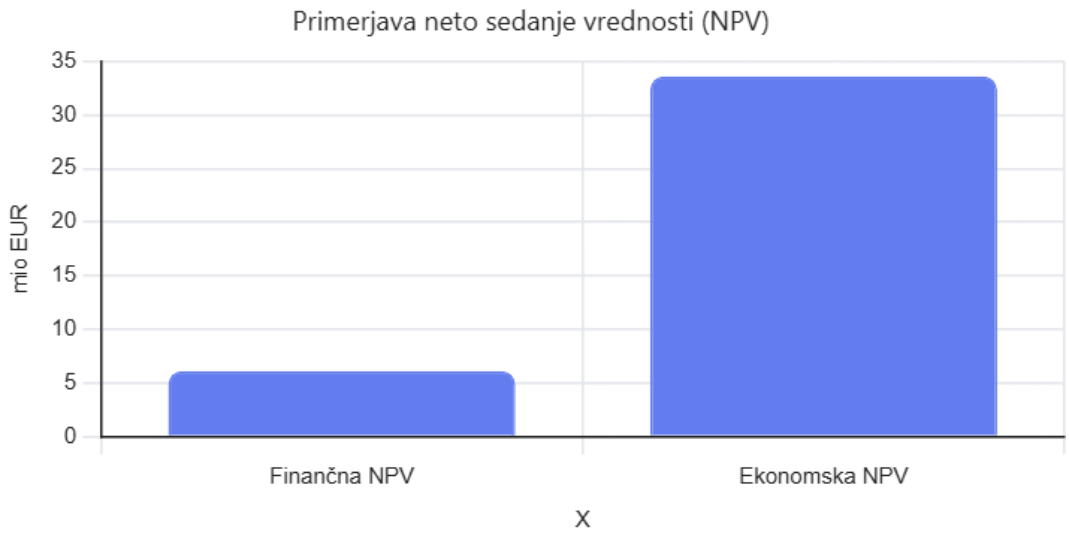
- Public utility service of waste incineration and so-called special services (regulated activity – prices approved by the Government of the Republic of Slovenia),
- Heat sales to the district heating system,
- Electricity sales on the market.

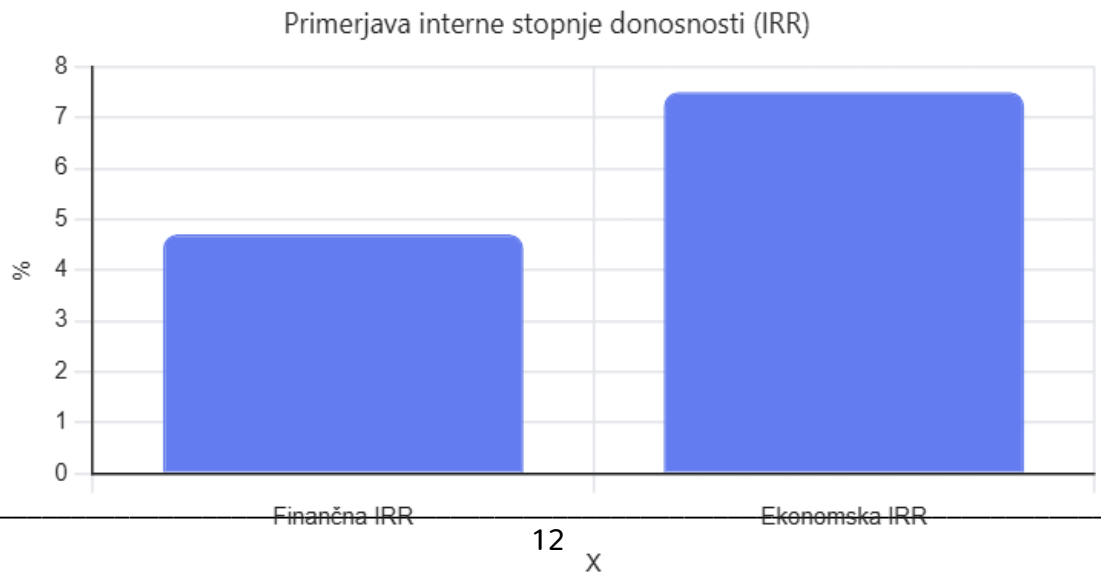
Economic (CBA) analysis:

- Economic NPV: +EUR 33.6 million
- Economic IRR: ~7.9%
- Payback period: ~16 years

The positive economic results are driven primarily by savings resulting from:

- reduced export of RDF (refuse-derived fuel),
- reduced landfilling,
- substitution of natural gas,
- ETS-related effects,
- shorter transport routes.





8. Alignment with Strategic and Planning Documents

The EIOM project is aligned with European, national, and local development documents in the fields of energy, waste management, and environmental protection. It supports the objectives of the circular economy, the reduction of landfilling, and the gradual decarbonisation of the energy sector. Compliance with legislation and strategic guidelines is a fundamental prerequisite for its implementation. The project is embedded in the context of the European Green Deal, waste directives, and renewable energy directives. At the local level, it is aligned with the development documents of the Municipality of Maribor. EIOM represents a strategic infrastructure measure clearly defined in the public interest.

The project is aligned with:

- the Sustainable Urban Strategy,
- the Strategy for the City of Maribor's Transition to a Circular Economy,
- the Action Plan for Sustainable Heat Supply for the City of Maribor,
- other local development and energy planning documents.

These documents define the need for a transition to low-carbon energy sources, increased energy efficiency of the district heating system, and efficient local waste management. Within this framework, EIOM represents a key project, as it provides a stable and locally available heat source while also supporting circular economy objectives.

In the field of waste management, the project supports the goals of national programmes, which foresee:

- reducing landfill disposal,
- increasing waste recovery,
- closing material loops.

Energy recovery in this system represents a necessary complement to recycling for those waste streams that cannot be materially recovered.

At the European level, the project is aligned with:

- the European Green Deal,
- waste directives,
- circular economy strategies and action plans.

These policies emphasise emission reductions, efficient resource use, and the closing of material and energy loops, which are the core objectives of the EIOM project.

9. Conclusion

The EIOM project represents a comprehensive and long-term solution to two key challenges of modern cities: efficient management of non-recyclable municipal waste and ensuring a reliable, cost-stable, and low-carbon heat supply. The project is based on proven technological solutions, is technically mature, and is designed in compliance with applicable environmental and spatial standards, enabling its safe integration into the urban environment.

Through its systemic role, EIOM significantly contributes to reducing the use of fossil fuels, decarbonising the district heating system, and increasing the city's energy resilience. At the same time, the project closes an important missing link in the waste management system by enabling local energy recovery from residual waste that cannot be recycled. In this way, EIOM represents a development-driven infrastructure measure in the public interest and one of the key foundations for the sustainable and long-term development of the City of Maribor.