

# How to start the waste heat and boiler house competition?

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Blumberga**

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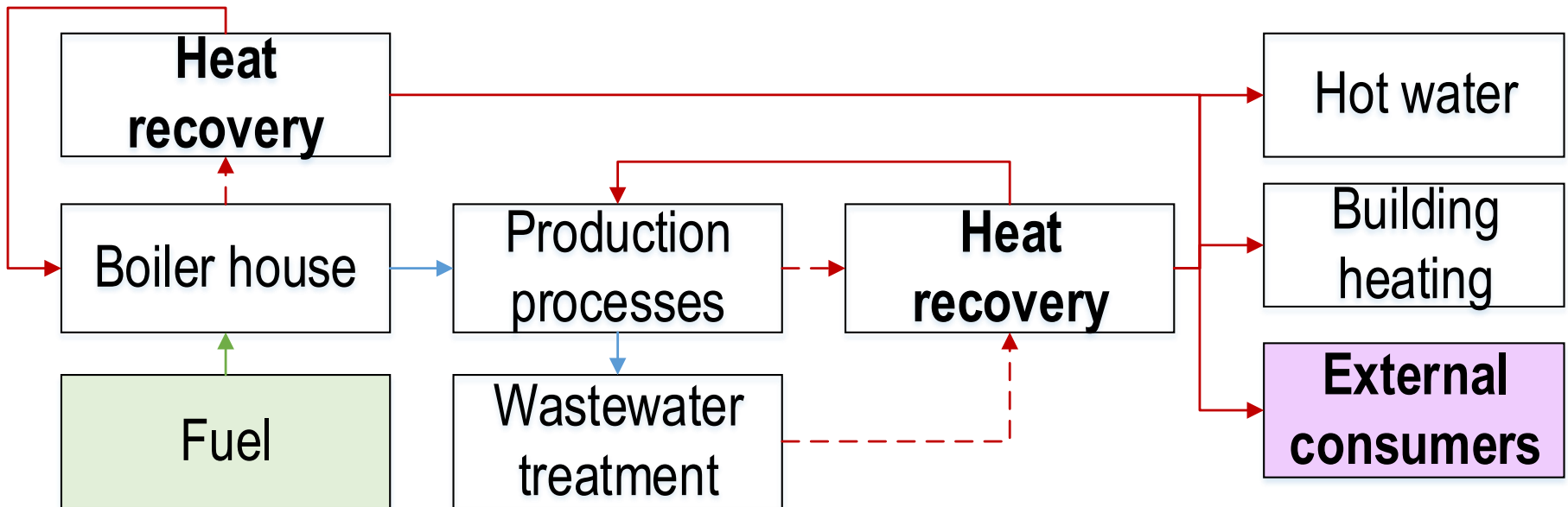
# Content

- Data collection for waste heat
- Mapping of waste heat
- Results of System Dynamics modelling
- Conclusions

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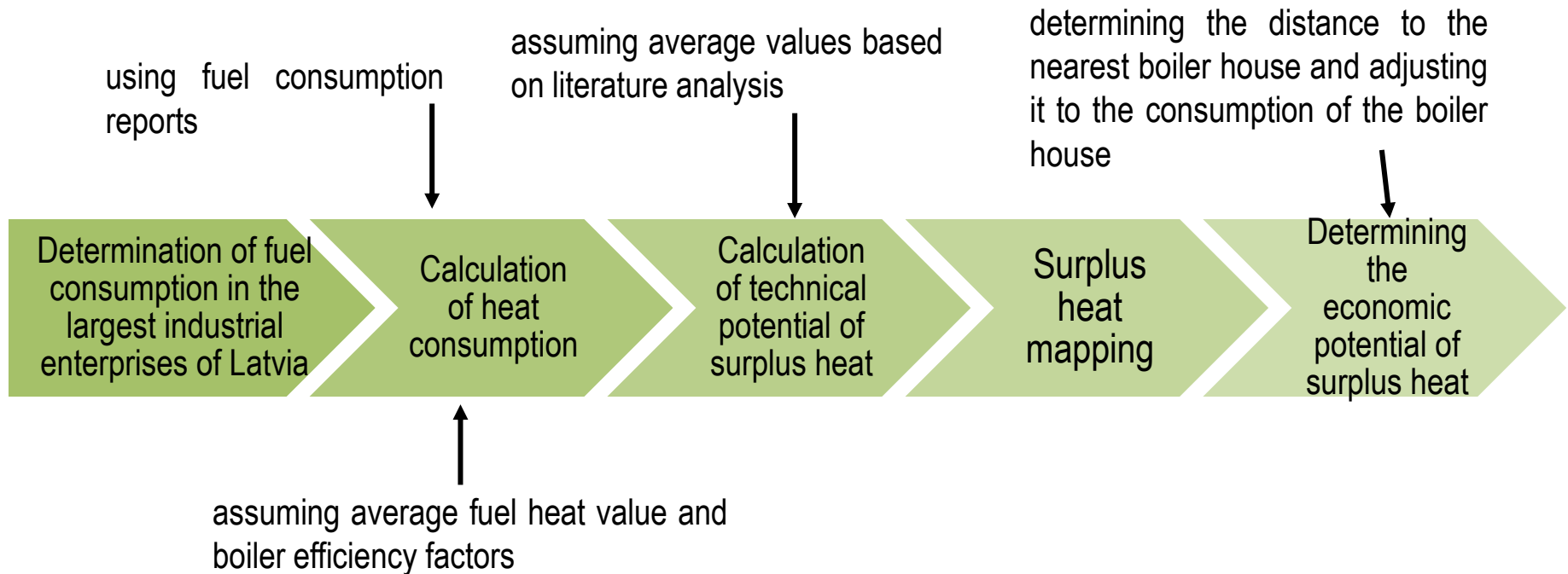


# Waste heat flow chart



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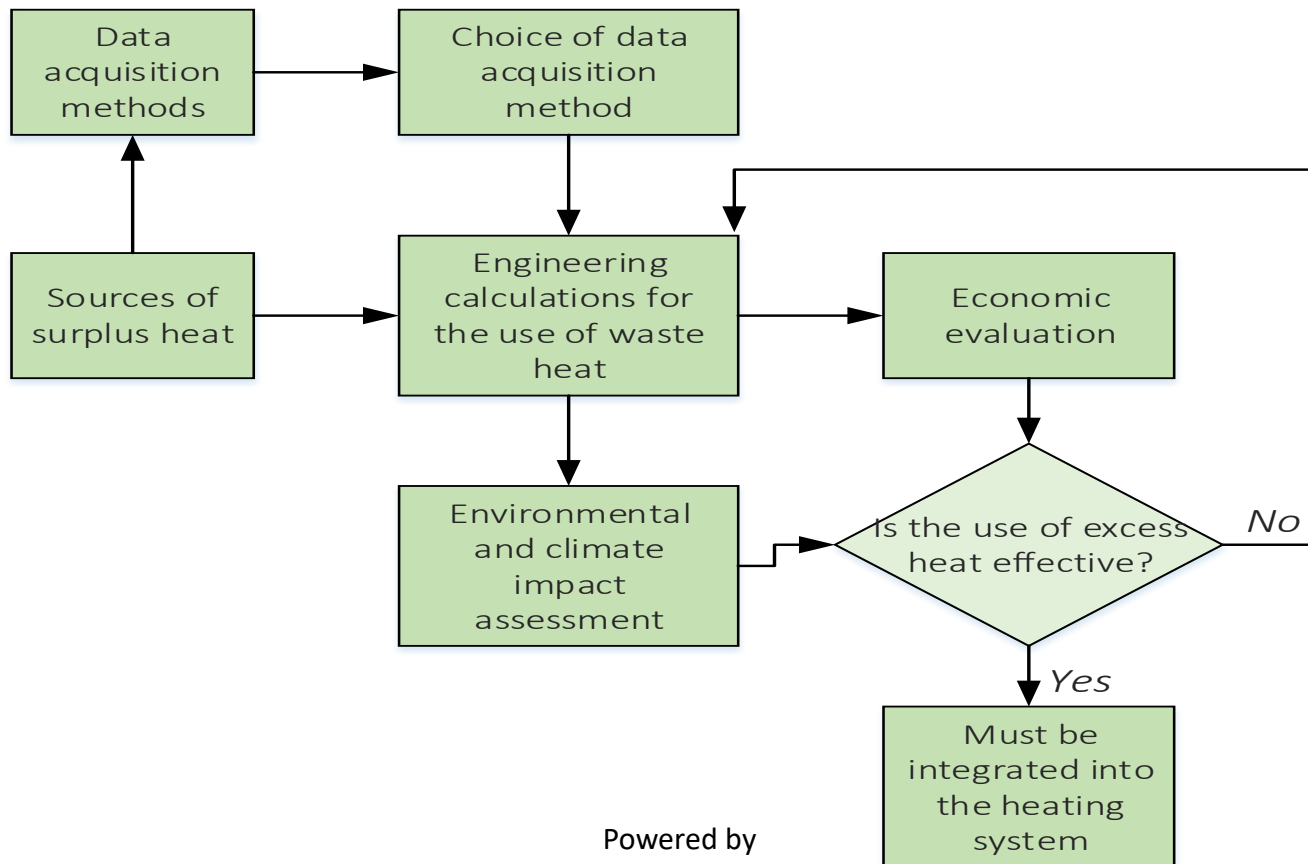
# Waste Heat Evaluation Steps



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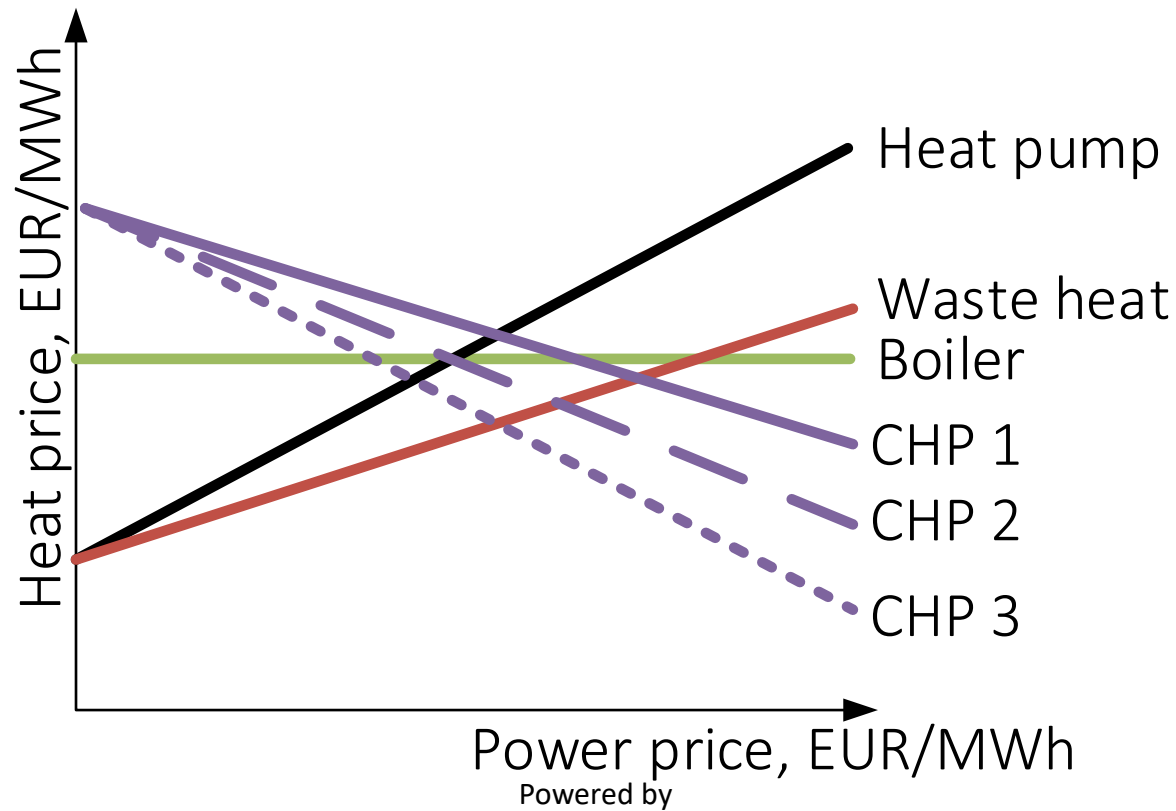


# Methodology Algorithm



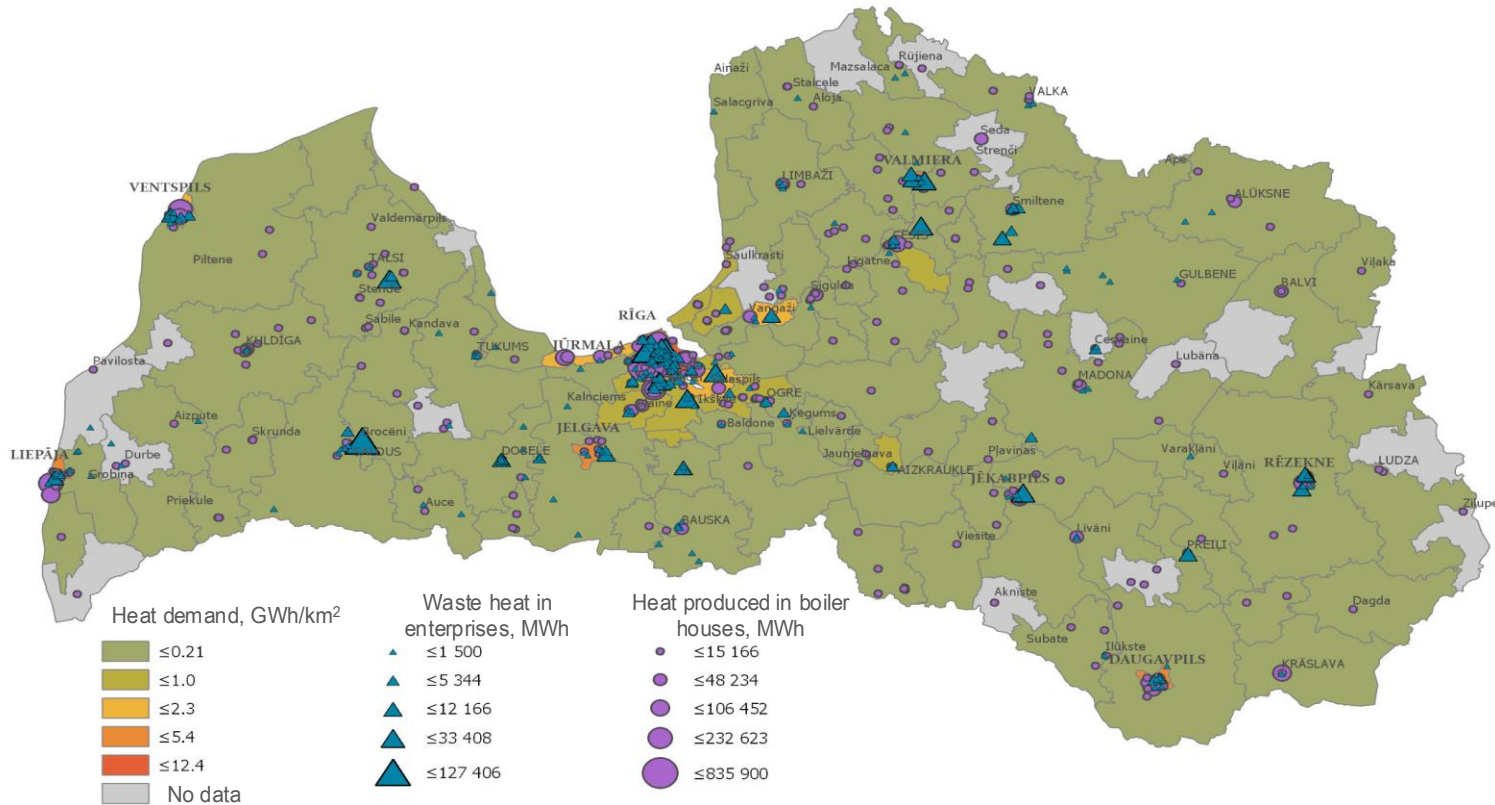
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# Waste heat potential assessment by heat and power price levels



# Case in Latvia

# Waste Heat mapping. Case in Latvia

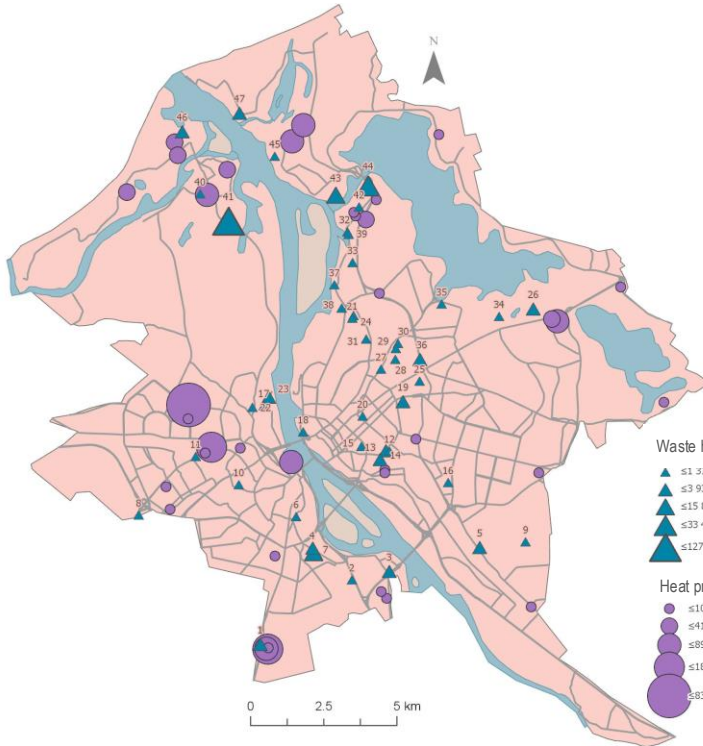


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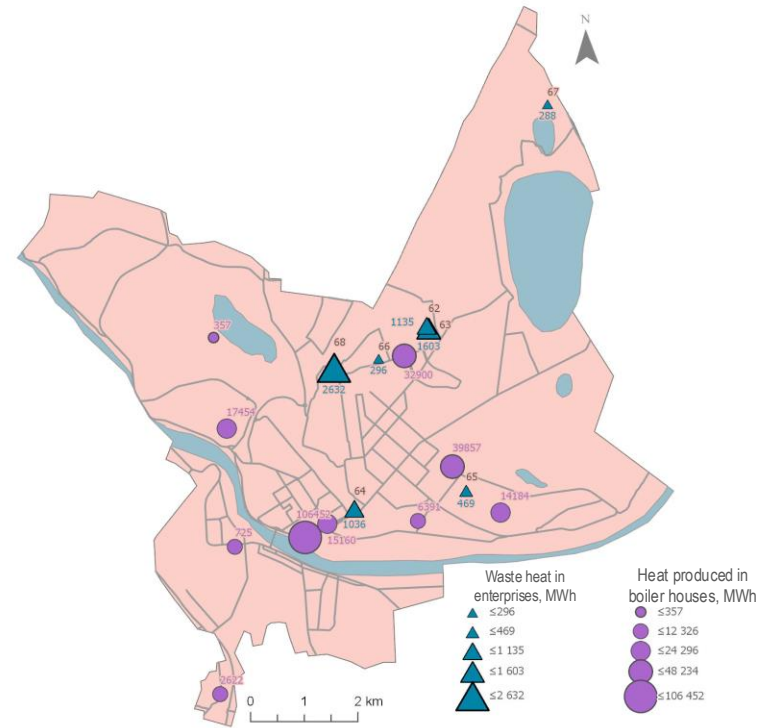




# Waste Heat mapping. Regional Level



a) Riga



b) Daugavpils

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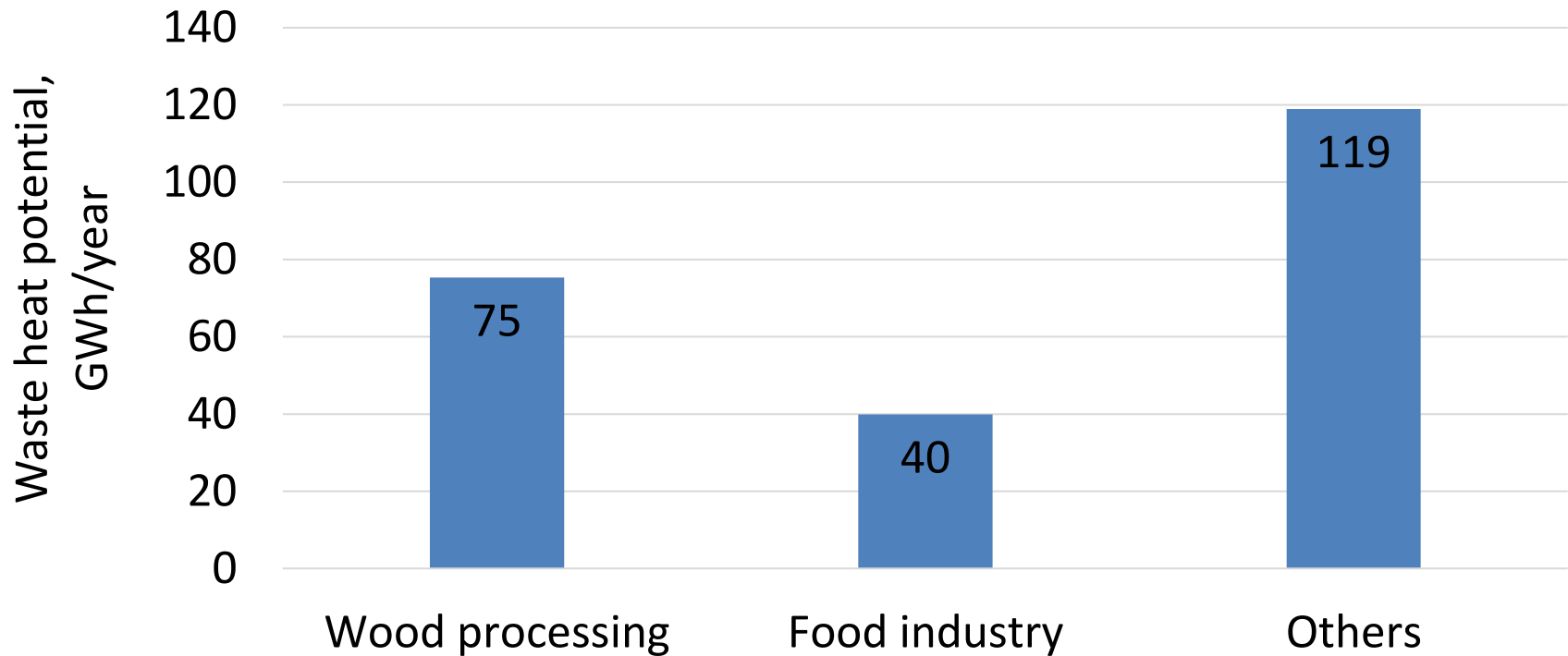
## Determined potential

Total waste heat potential, MWh/year	271 760
In rural areas, MWh/year	38 472
Less than 500m to DH, MWh/year	<b>36 687</b>
From 500-1000 m to DH, MWh/year	<b>44 132</b>
From 1000 to 2000 m to DH, MWh/year	<b>106 088</b>

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# Determined potential. Industries

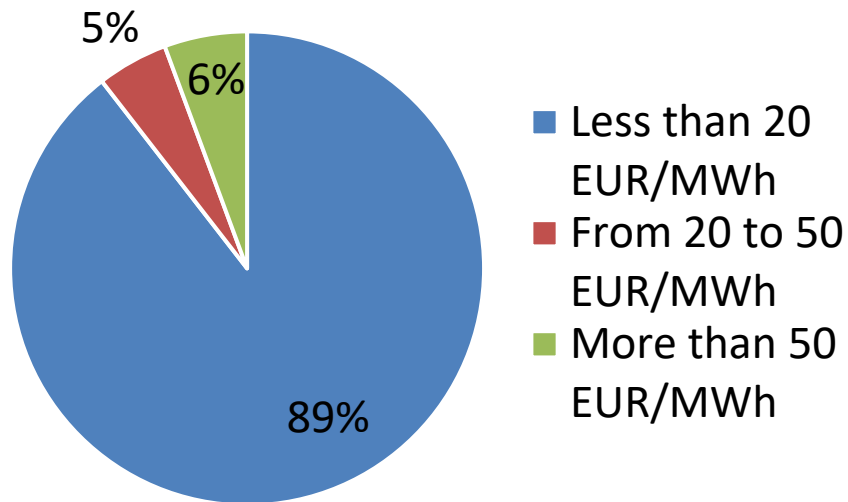


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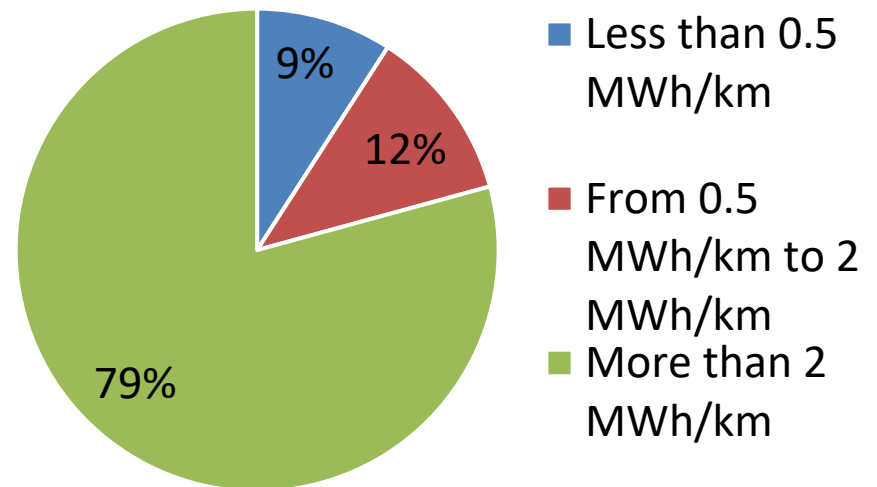


# Network and energy users

## Specific heating network costs



## Specific heat density



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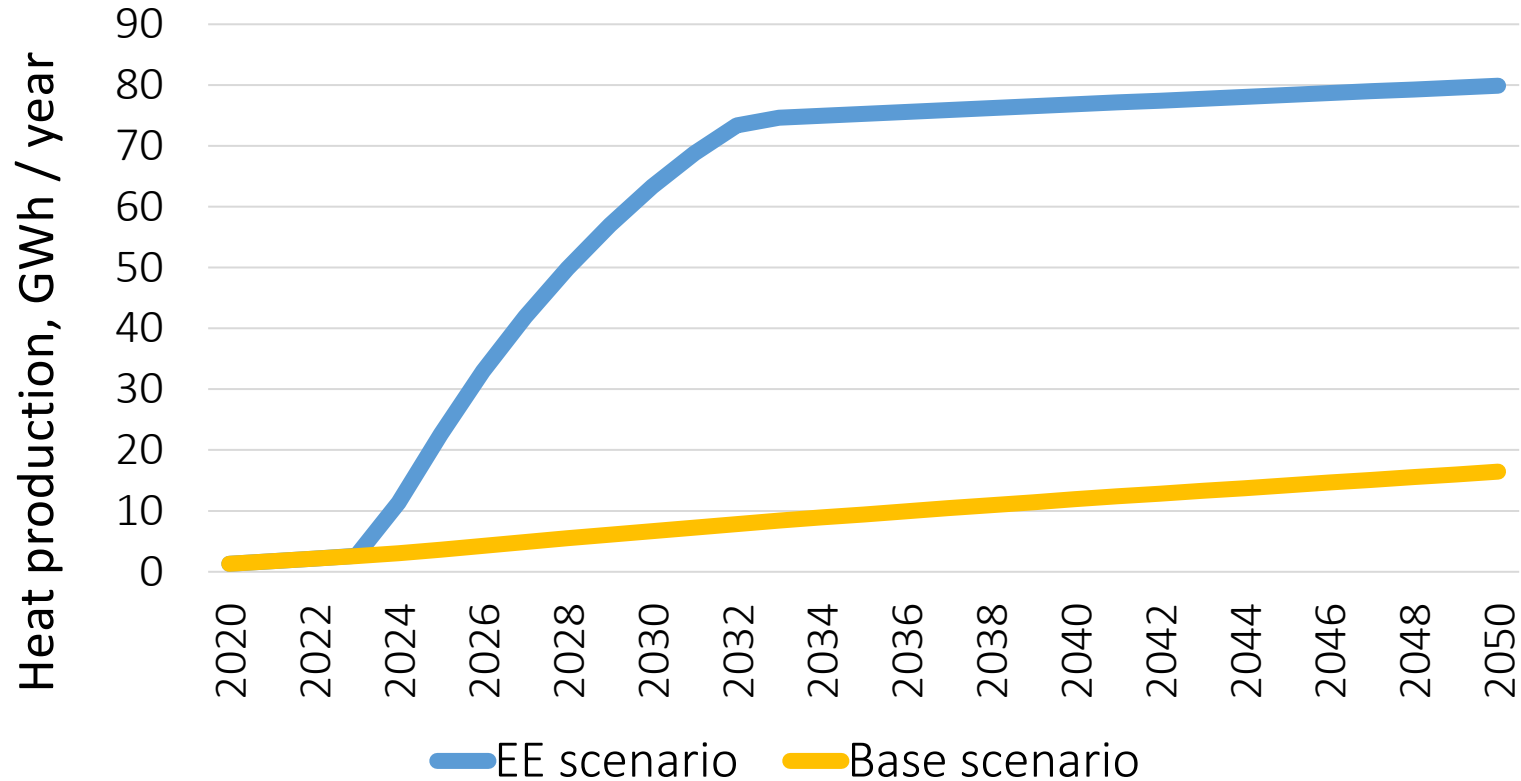
# System Dynamic Modelling Results. Scenarios

- Basic scenario –withot support
- Energy efficiency (EE) scenario – additional support for DH heating network investments

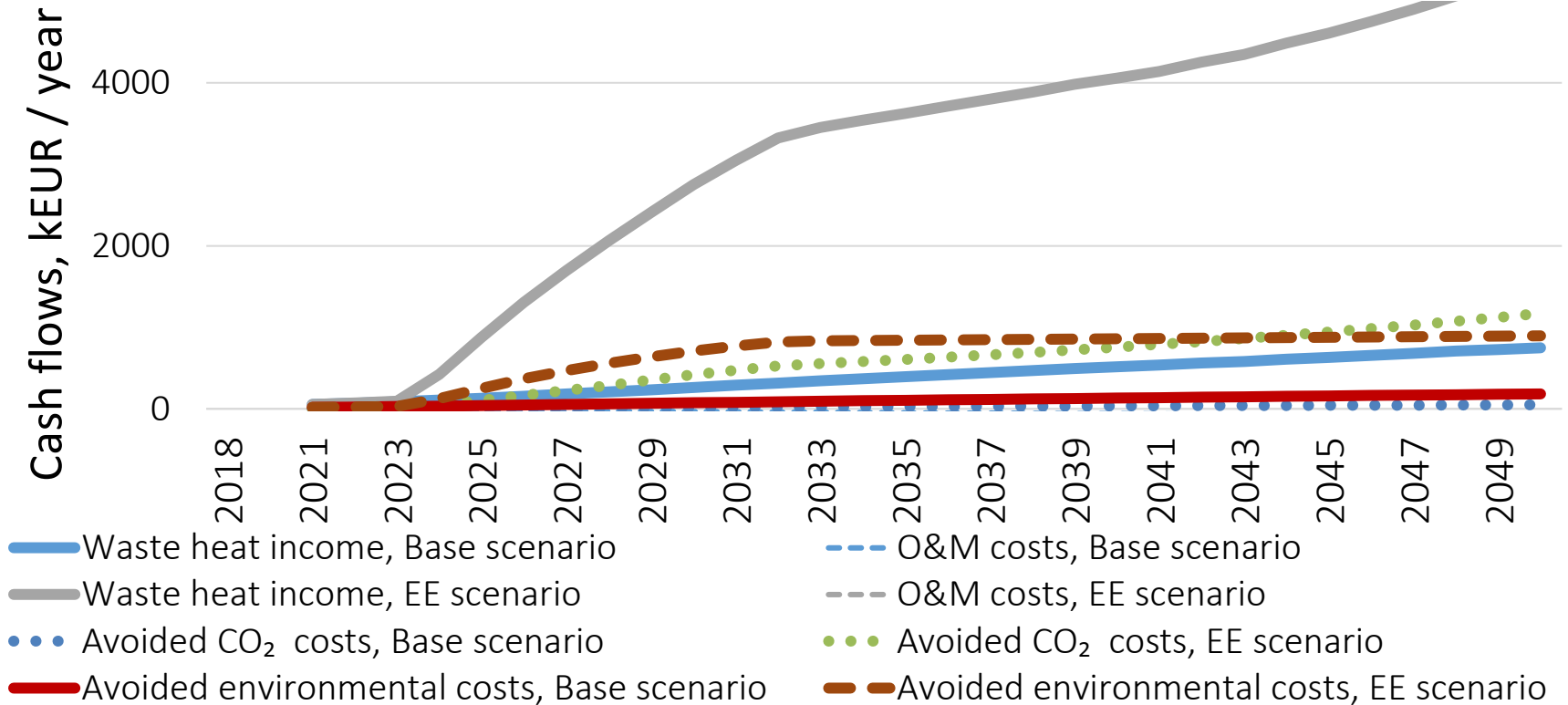
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# Dynamics of integrated waste heat



# Cash flows for scenarios



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# Conclusions (1)

- The methodology for collection and evaluation of data of waste heat has been developed throughout the geographical area, the total industrial production processes and the amount of heat produced, taking into account the restrictions on the use of waste heat.
- The methodology is proved for Case study in Latvia: total determined waste heat potential from industrial plants is 271 GWh/year. Around 186 GWh/year of waste heat are allocated less than 2 km from boiler houses and could be integrated within the DH.

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## Conclusions (2)

- The system dynamics model is developed for analysis of scenarios 2050. Two scenarios are analysed: baseline scenario assumes the integration of waste heat without additional support mechanisms. The EE scenario includes financial support for connections to industrial enterprises to integrate waste heat into DHS. Results for case in Latvia shows that financial support for network will play significant role: integrated waste heat rises up to 16.4 GWh/year in the basic scenario and up to 80 GWh/year in EE scenario in 2050.

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DEVELOPMENT OF HEAT SUPPLY  
AND COOLING SYSTEMS IN LATVIA

LATVIJAS SILTUMAPGĀDES UN  
DZESĒŠANAS SISTĒMU ATTĪSTĪBA

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