Second Symposium of Urban Mining

Pre-conditioning of old-landfilled material for further upscale processes

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Outline

- The landfill mining project ‚TönsLM‘
- Why pre-conditioning?
- The pre-conditioning setup
- Processing results
- Challenges
- Summary & Outlook

OUTLINE

The Landfill Mining project: ‚TönsLM‘

- Duration: 8/2012-7/2015
- **Aims:**
  - Holistic view on the topic of ‚landfill remediation‘
  - Development of processes for recovery of valuable materials
  - Ecological & economical bilancing
  - Development of guideline for Landfill Mining
- **Project partner:**
  - 3 Companies
  - 3 Universities: 6 research institutes
  - 1 Authority

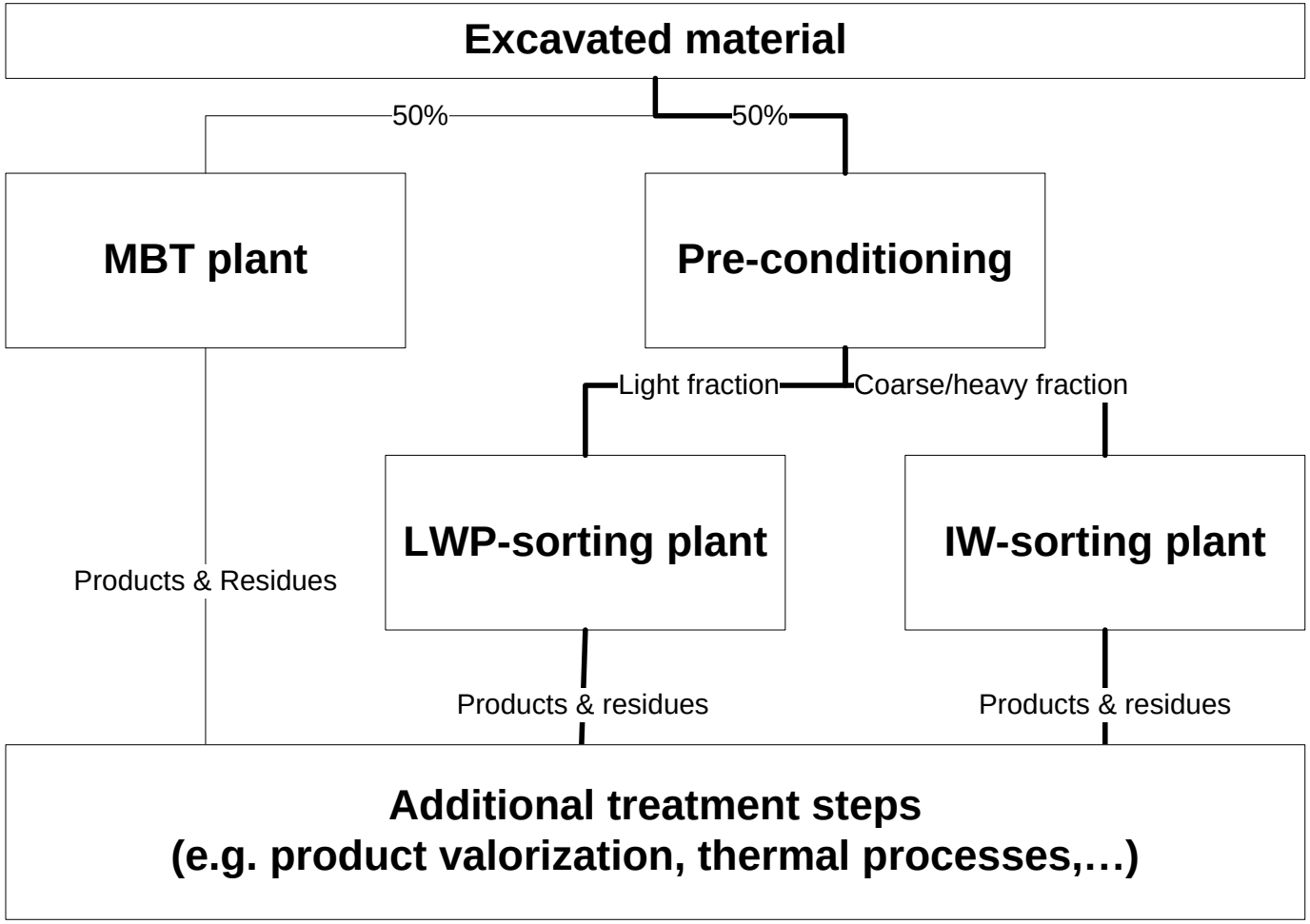
I.A.R.

PROJECT

GEFÖRDERT VOM
Bundesministerium für Bildung und Forschung
FONA Ressourceneffizienz
BMBF

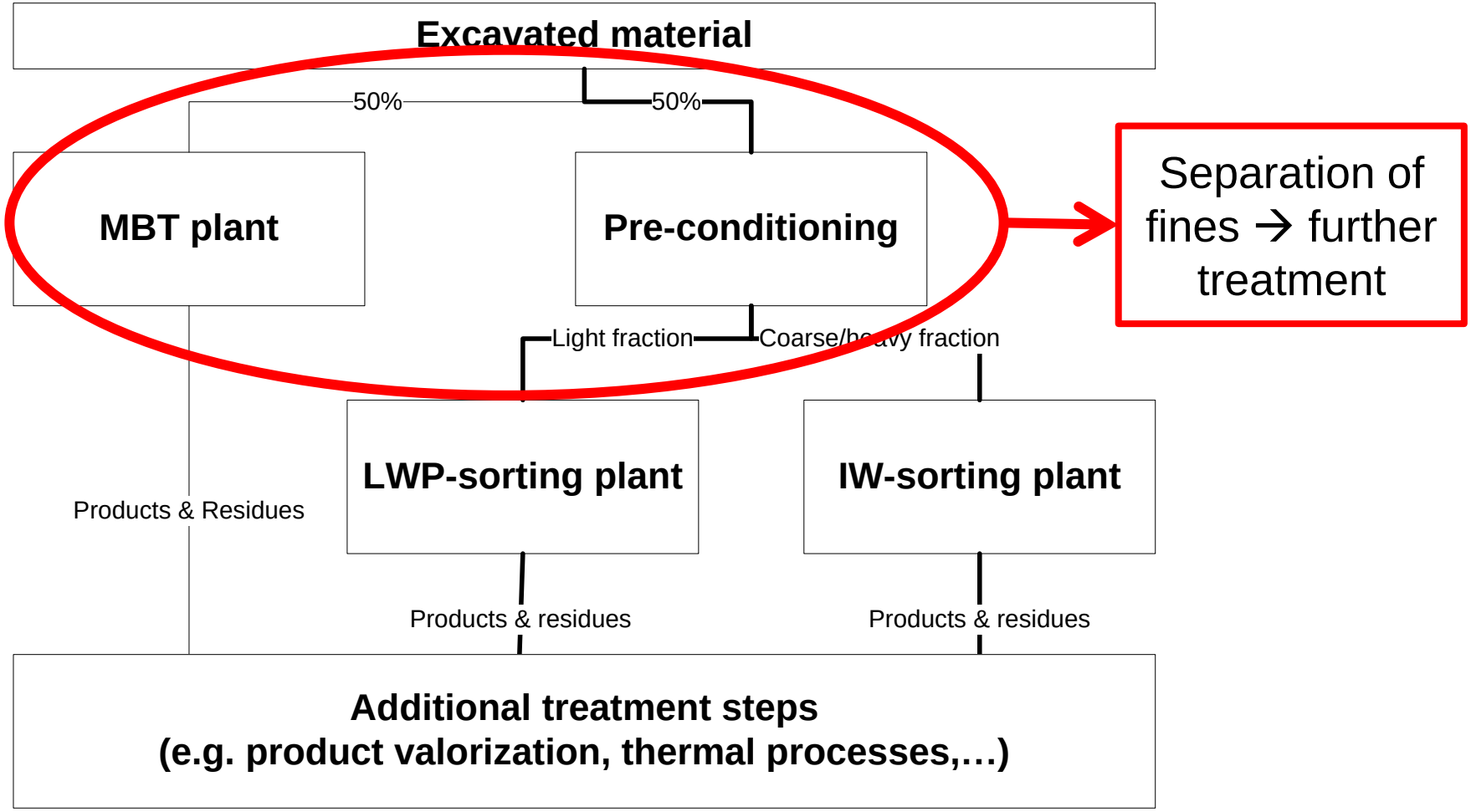
Landfill ‚Pohlsche Heide‘

Project overview



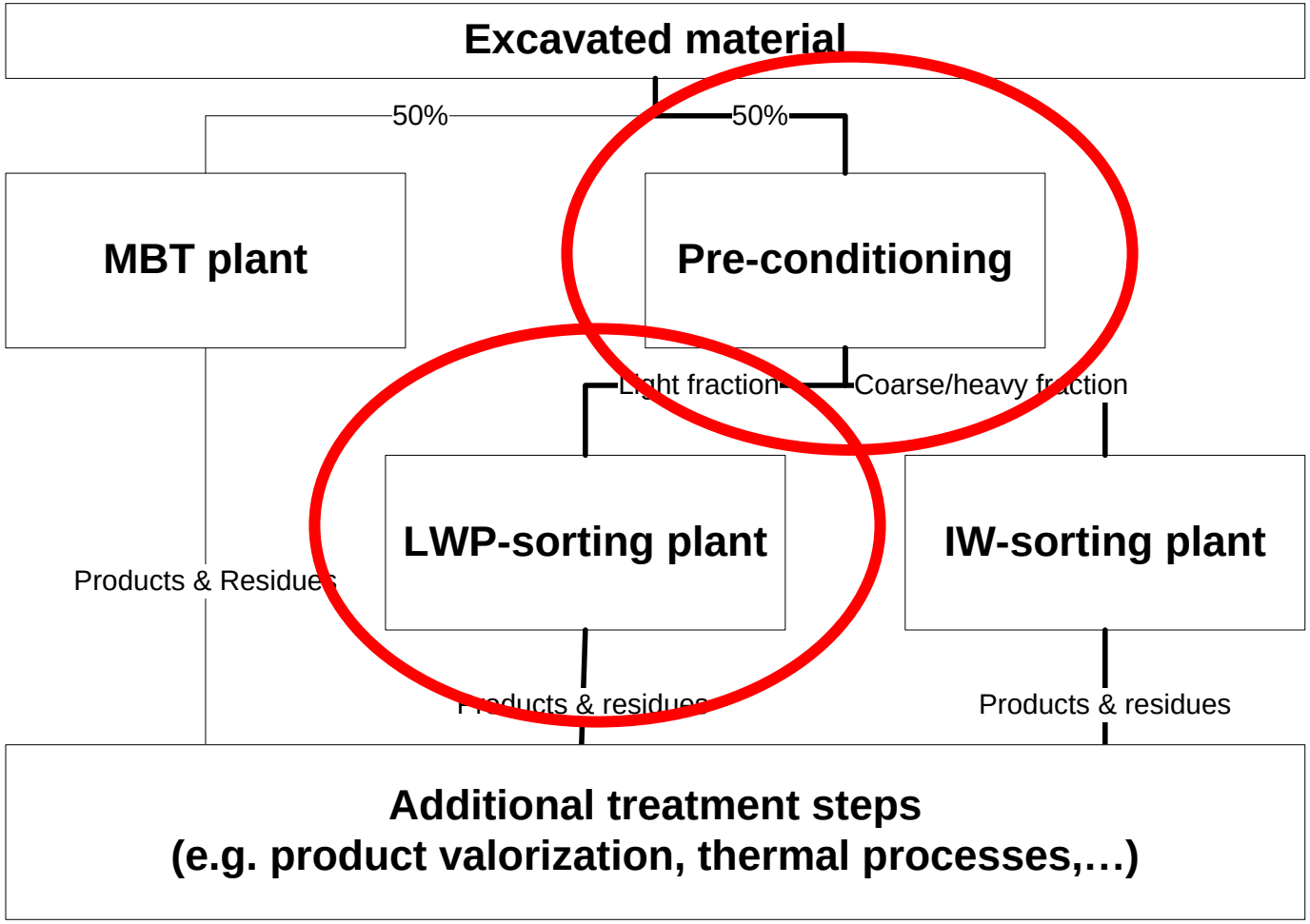
PROJECT

Project overview



PROJECT

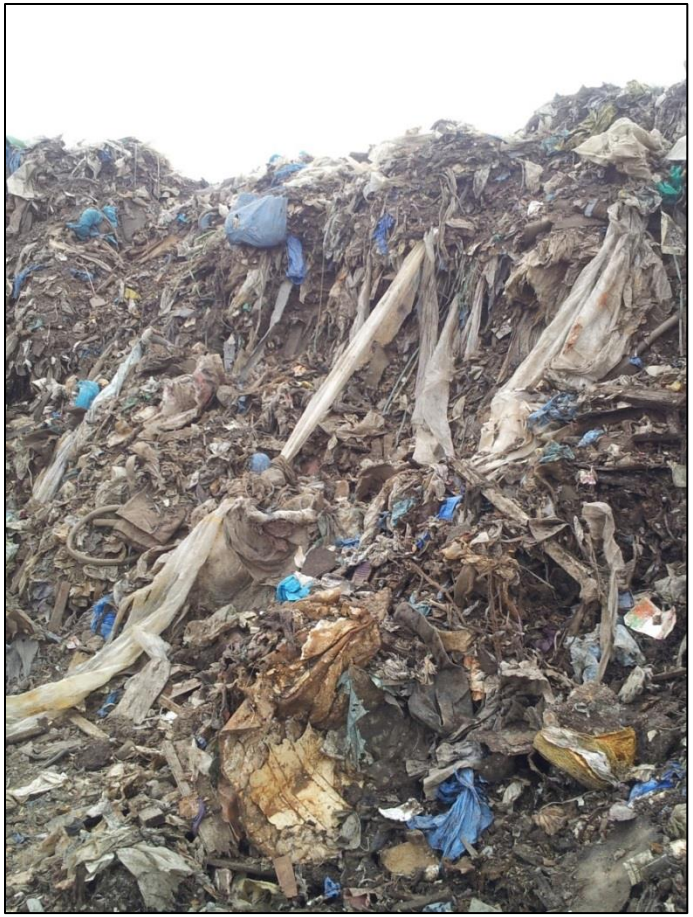
Project overview



PROJECT

Material after excavation

EXCAVATION



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Why pre-conditioning?

- Preparation of material for further sorting processes
  - Sorting at LWP sorting plant = sorting of standard plastics
  - → Concentration of valuable materials (‚light fraction‘)
- Reducing amount of fines fraction (< 60mm)
  - Transport costs
  - Processing costs
  - Subsequent processes ≠ fines processing
- Protection of subsequent machinery and processes
  - Removal of large objects (with wheel loader)

Large objects

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Iron barrel

Large objects

Technical fabric

Railway sleeper

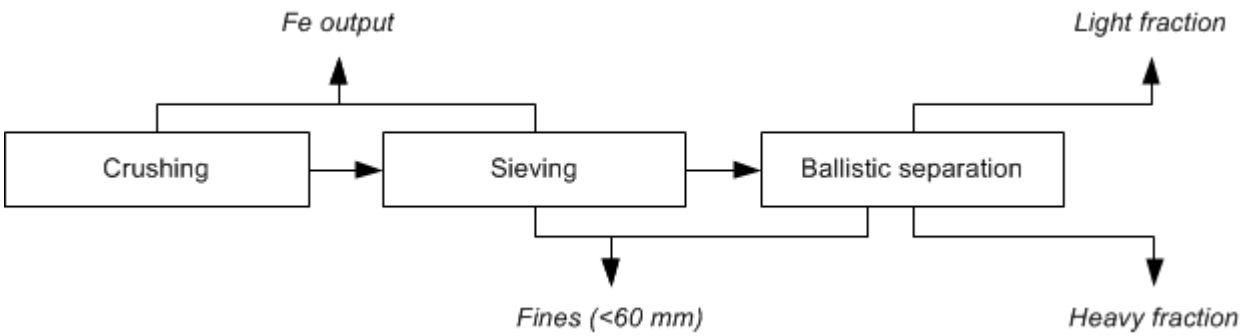
I.A.R.

Large objects

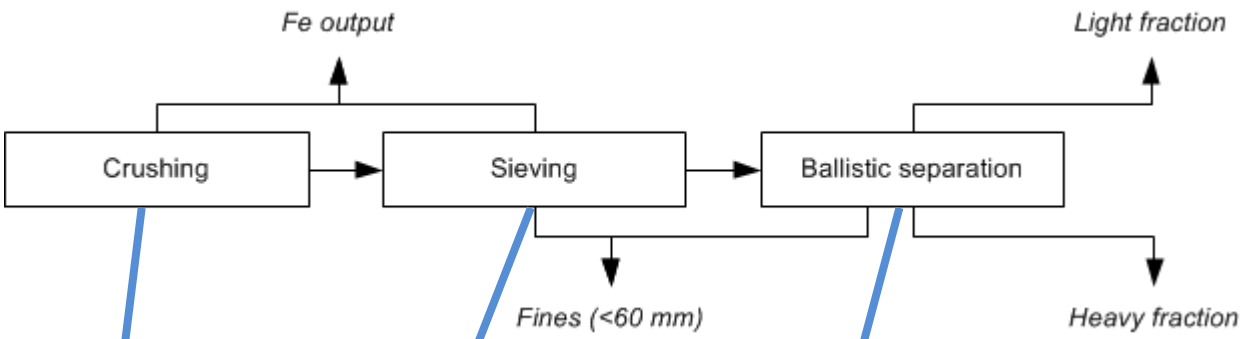
I.A.R.

Truck tyre

The pre-conditioning setup



The pre-conditioning setup



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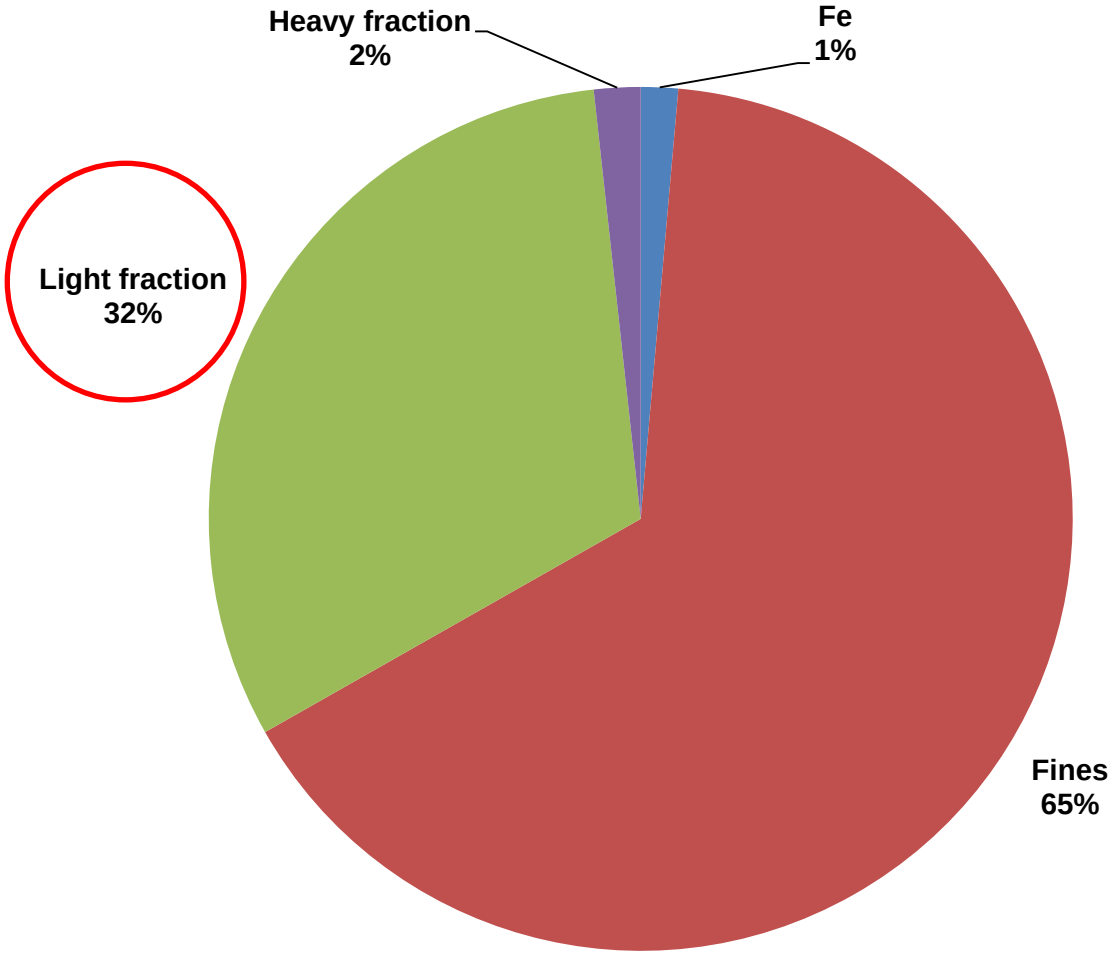
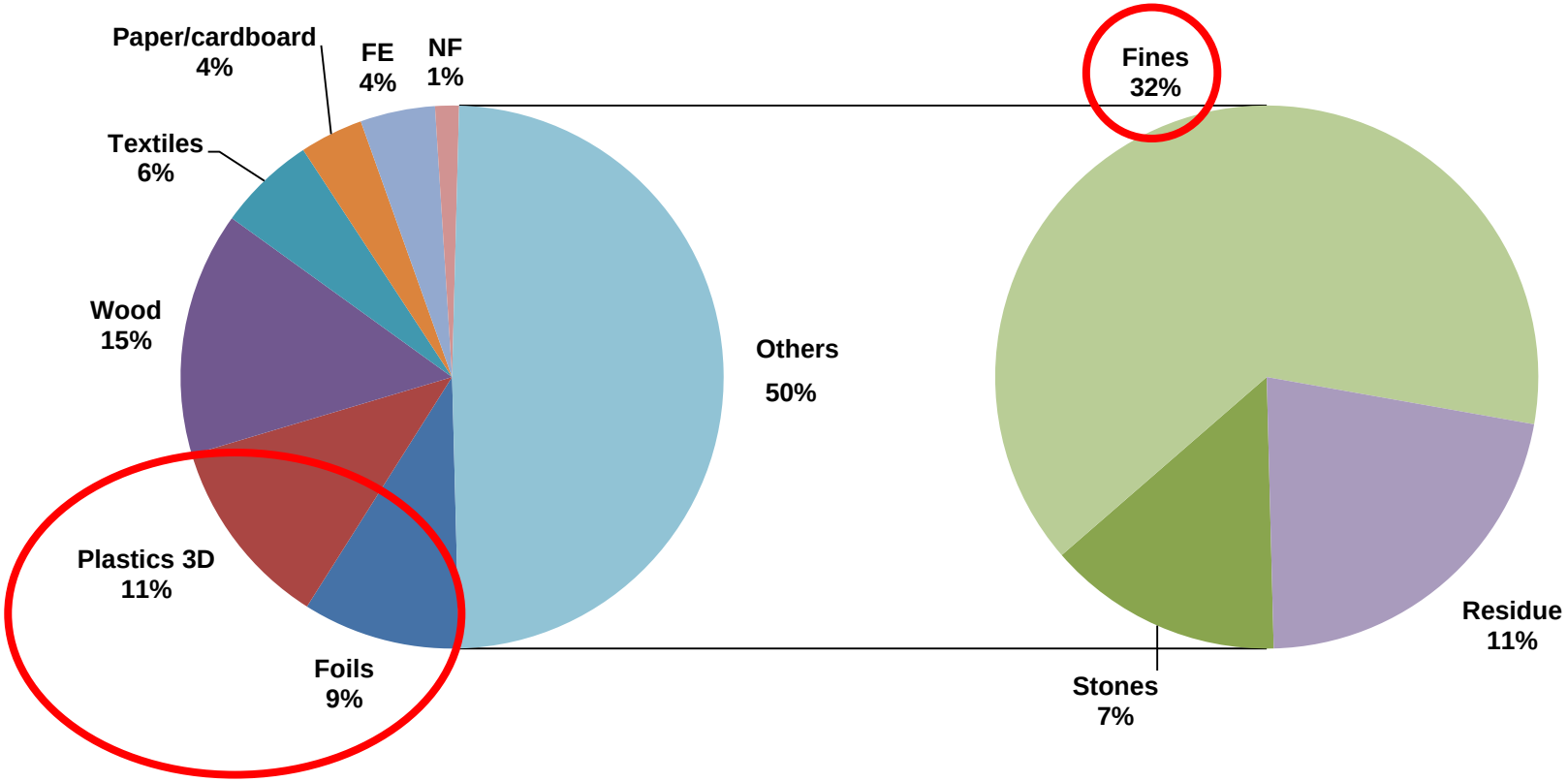
Achieved mass balance*



OUTPUTS

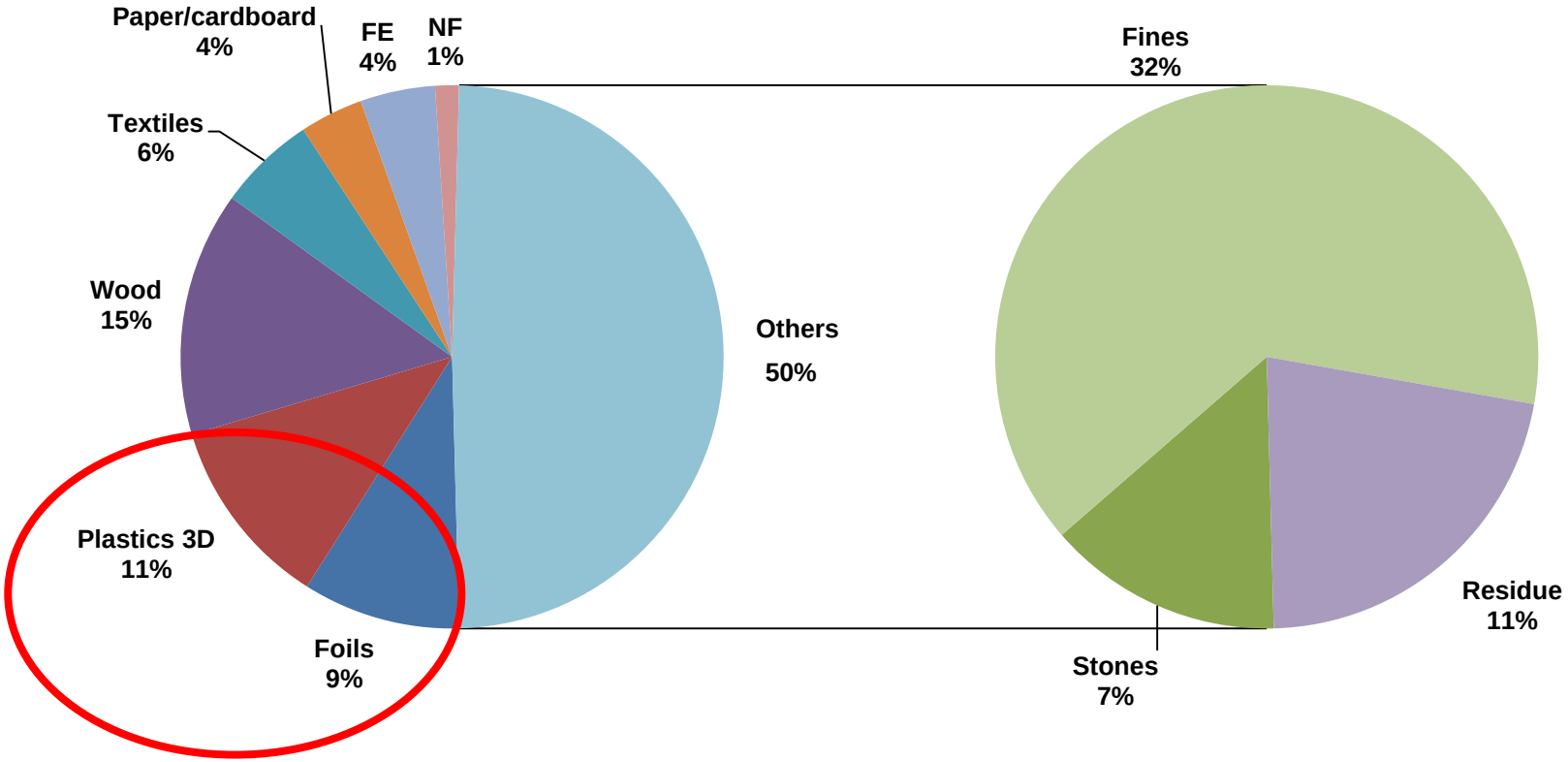
**average for all 3 sampled areas*

Material composition: Light fraction



OUTPUTS

Material composition: Light fraction



OUTPUTS

= 6 % of Input

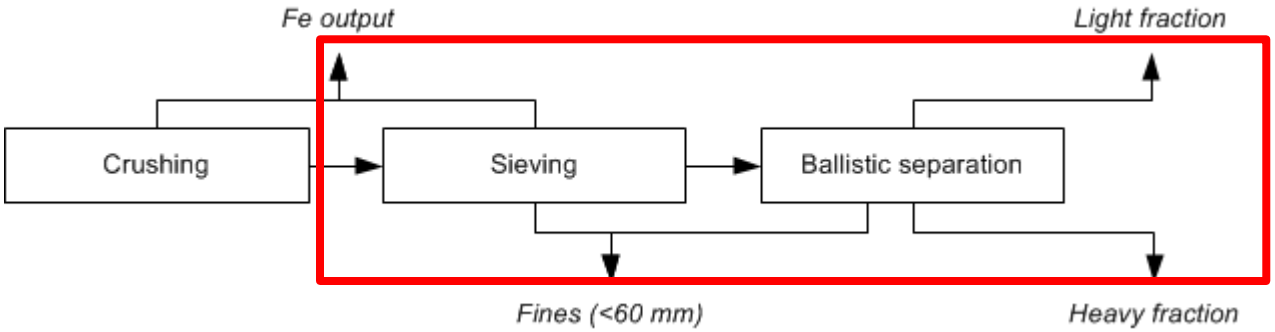
TECHNICAL LIMITATIONS

Processing challenges

- High amount of fines (< 60 mm): >> 60%
- Low process efficienies of pre-conditioning
  - Wet material (moisture content up to 50%)
  - Plugging of paddles (ballistic separator)

    → layer of clay
- Mobile aggregates
  - Limitations in process dimension

The pre-conditioning setup



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Summary & Outlook

- Need for improvement of fines separation
- Cost efficiency of landfill mining projects
  - Increase of separated amount of fines
  - Transport costs
  - Treatment costs
- ***Pre-conditioning is a important part of the landfill mining process chain!***

- **Next steps:**
  - Analysing of product quality

    → Plastics for material recycling?
  - Starting of 2nd project part:

    → slag landfill
  - Input to guideline (technical feasibility)

END

Thanks for your attention!

Special thanks to all partners for the cooperation and support in the ‚TönsLM' project!

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