M&S UMWELTPROJEKT GMBH

www.mus-umweltprojekt.de

State of Mechanical Biological Waste Treatment in Germany

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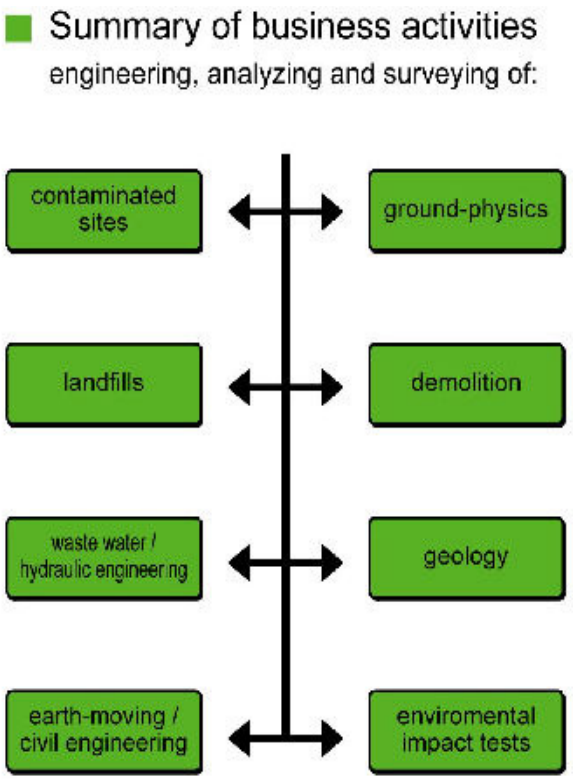
About M&S Umweltprojekt

- M&S Umweltprojekt GmbH
- Headquarters Plauen, Germany
- 8 agencies and 1 subsidiary company in Germany
- Foreign agencies/ subsidiary companies in:
  - Aš, Czech Republic
  - Aleppo, Syria
  - Siauliai, Lithuania
  - Ufa, Russia



About M&S Umweltprojekt

New Headquarters M&S Umweltprojekt GmbH,
Germany, 08525 Plauen, Pfortenstr.7

Introduction

Kinds of waste treatment /disposal

a) Landfilling
b) Incineration
c) *{Mechanical waste treatment}*
d) Mechanical biological waste treatment

Waste composition

Waste for landfilling = inhomogeneous mixture

Introduction

Environmental hazards of waste disposal on landfills

- Production of leachate
- Production of landfill gas
- Settlement of the landfill body
- Fire danger

- Extension of diseases by animals
- Extension of diseases by dust
- Burden by stench
- Usage of ground areas

Waste collection

Strategy of modern waste management systems

- Avoidance of waste production
- Recycling of waste
  - Material recycling
  - Thermal recycling (fuel value > 11MJ/kg regulated by German Kreislaufwirtschafts- und Abfallgesetz)
- Disposal of waste aftertreatment

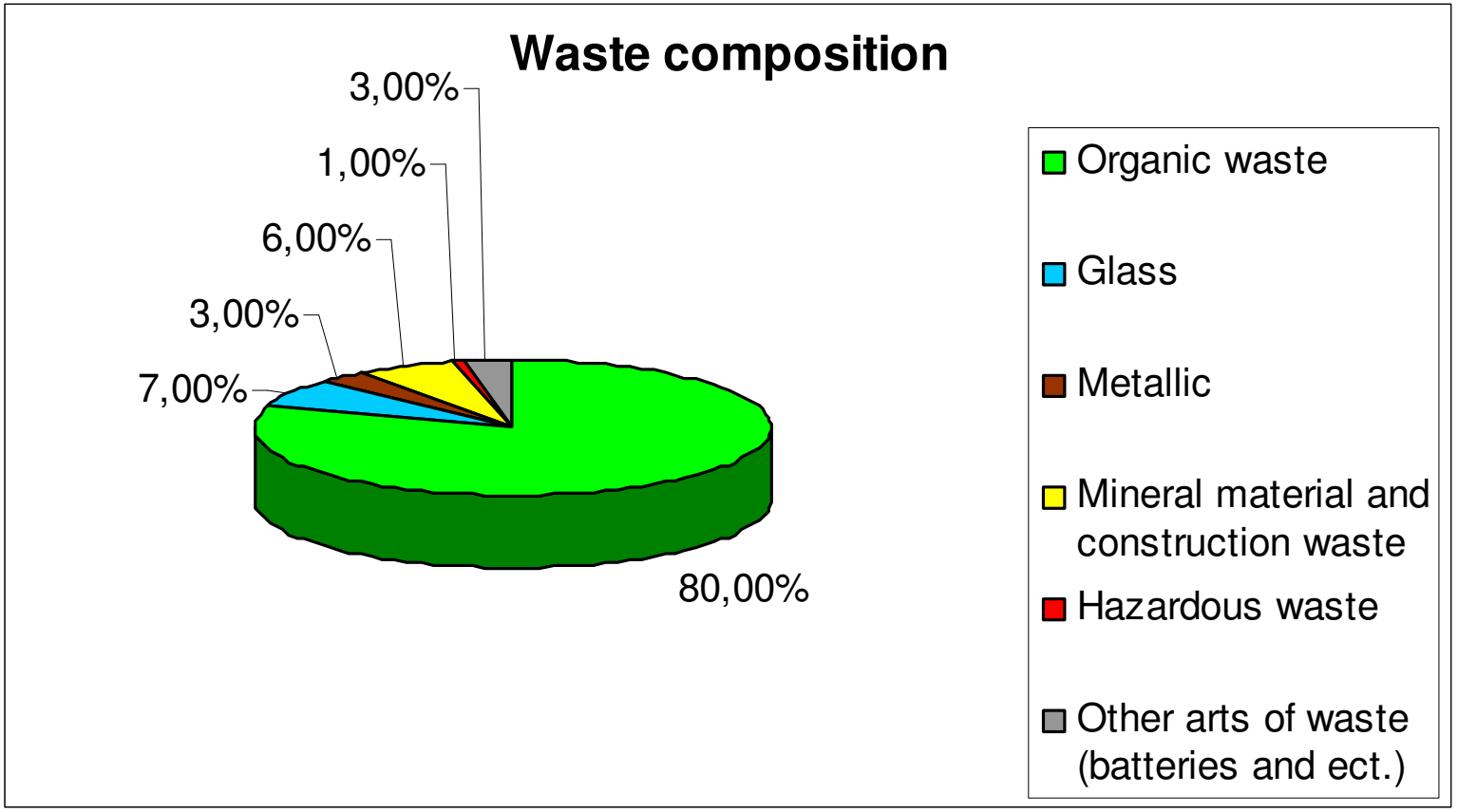
Introduction

Principal reasons for waste *(pre)*treatment

- Reduction of leachate production
- Reduction of landfill gas production
- Reduction of the landfill body settlement
- Economy of landfill capacity

Main aim: Reduction of the Carbon / biodegradable content of waste before landfilling

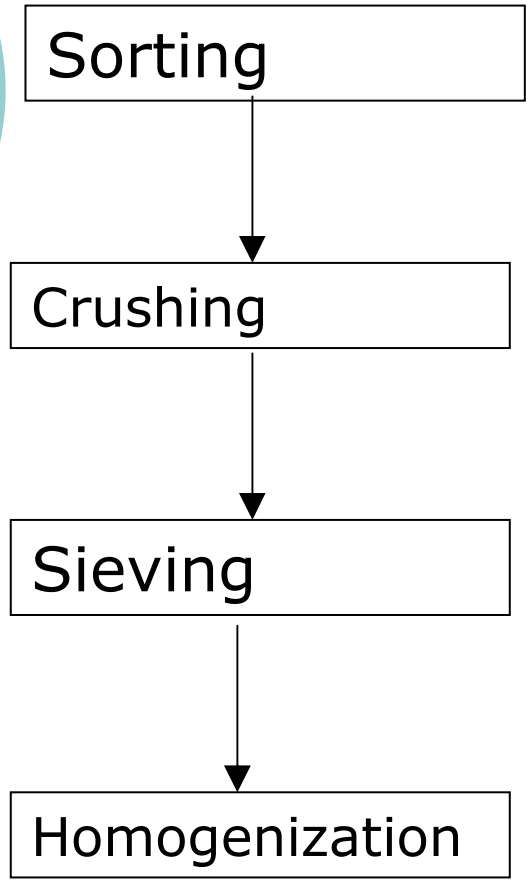
Waste composition



Mechanical Biological Waste Treatment (MBT) / Preface

- MBT is structured in a mechanical sorting and crushing phase and in a biological phase (degradation of bio components)

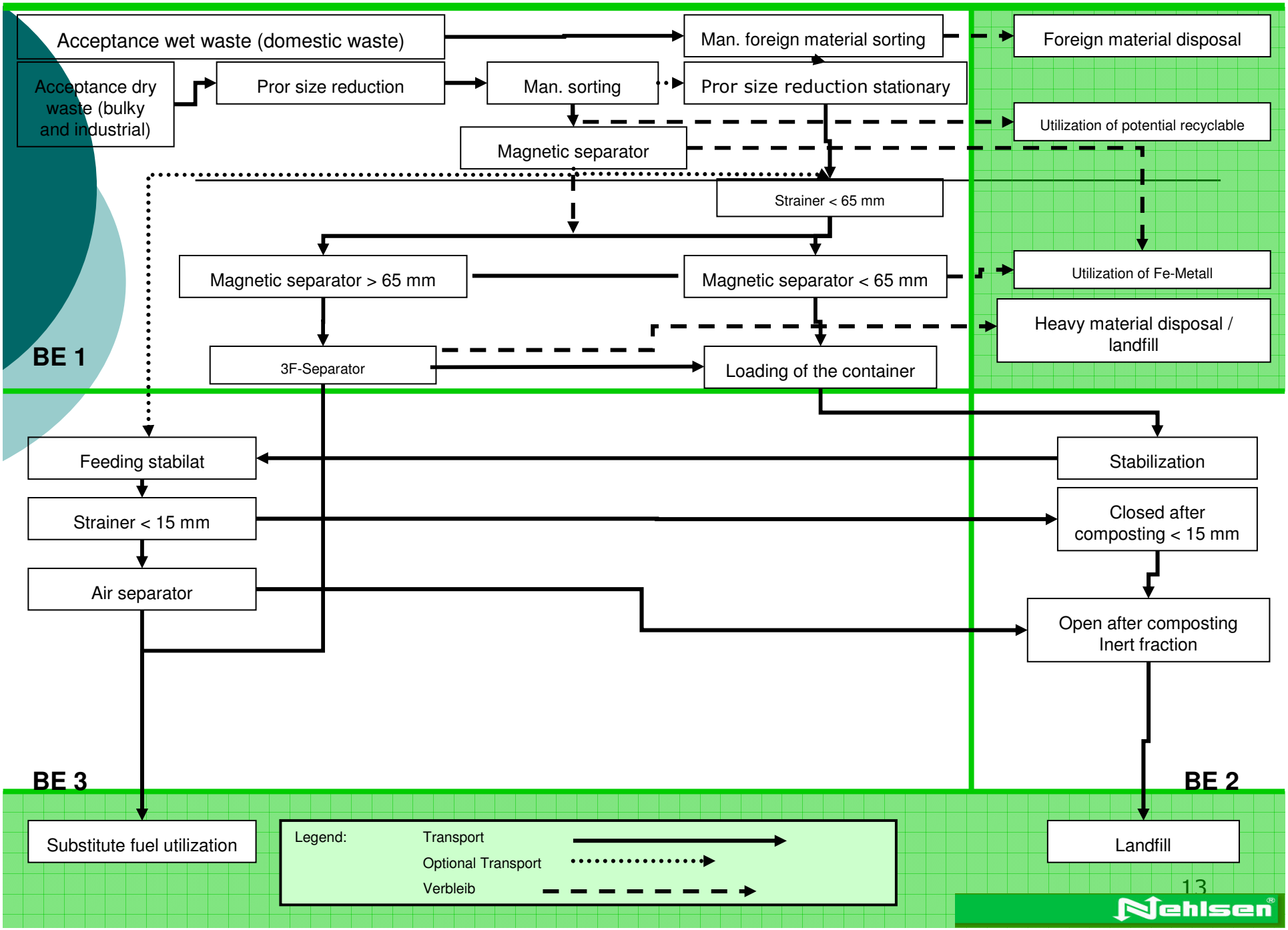
Mechanical Treatment



1. Volume decrease (Potential recyclables and harmful substances will be separated)
2. Surface increase for microorganisms
3. Separation of non-degradable materials (Sand, foil, carpets etc.)
4. Addition of water, nutrients to get optimal degradation conditions

MBS Vogtland

- MBS Vogtland has been in operation since May 2007
- Capacity: 50,000t/a domestic and industrial waste
- Waste from Vogtland region and Plauen city, inhabitants 260,000
- Investment costs: 24 Mio €
- Construction period: 2a

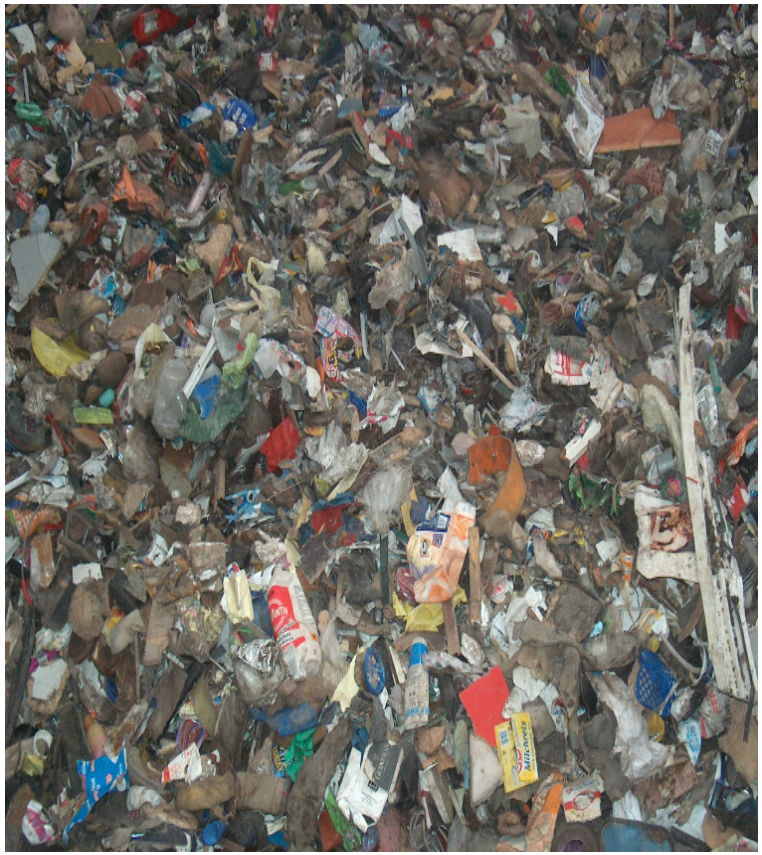

Acceptance wet waste (domestic waste)
Man. foreign material sorting
Foreign material disposal
Acceptance dry waste (bulky and industrial)
Pror size reduction
Man. sorting
Pror size reduction stationary
Utilization of potential recyclable
Magnetic separator
Strainer < 65 mm
Magnetic separator > 65 mm
Magnetic separator < 65 mm
Utilization of Fe-Metall
Heavy material disposal / landfill
BE 1
3F-Separator
Loading of the container
Feeding stabilat
Stabilization
Strainer < 15 mm
Closed after composting < 15 mm
Air separator
Open after composting Inert fraction
BE 3
BE 2
Substitute fuel utilization
Landfill
Legend:
Transport
Optional Transport
Verbleib

MBS Vogtland – Output

Stabilized fraction

Container for stabilization

MBS Vogtland – Output



Light fraction (to substitute fuel)

Substitute fuel

Costs of MBT

Calculation of specific operating costs

1. Fixed costs
   - Costs of capital
   - Administration costs
   - Taxes and assurances

+

2. Variable costs
   - Personnel costs
   - Maintenance costs
   - Energy costs
   - Miscellaneous costs

+

3. Selling and disposal costs
   - Selling costs substitute fuel
   - Disposal costs mineral fraction
   - Disposal costs foreign material
   - Sewage costs

+

4. Revenues
   - Revenues scrap iron

Costs of MBT

= Operating Costs per year

Specific Operating Costs=operating costs / operational capacity

Specific operating costs of MBS Vogtland = 136 €/t

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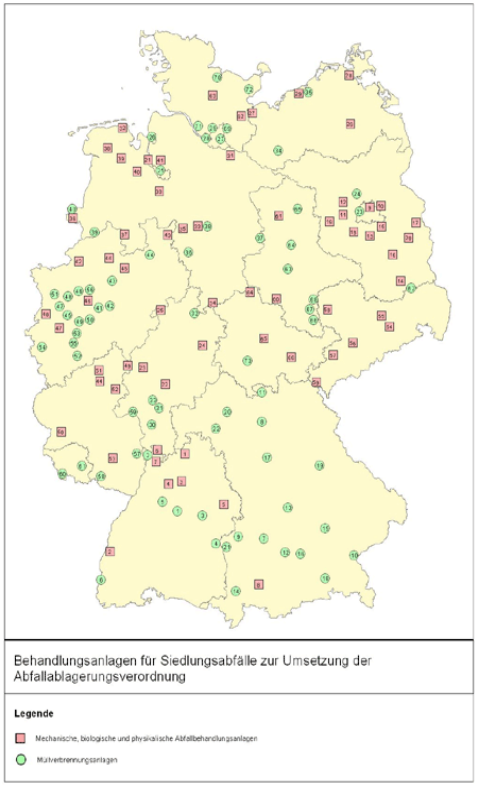
Location Illustration of MBT-Plants and Incineration-plants



- MBT locations are concentrated in the eastern and northern part of Germany
- Bavaria and Baden-Württenberg are centers of waste incineration

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Actual Situation

- The German MBT-Plants works with full load
- 25% of municipal waste are pre-treated by MBT.
  ⇒ this is approx. 6 Mt
- 3 Mt of high calorific fraction are produced (heating value is comparable to wood or brown coal)
- A larger nuclear power station could be replaced by this energy content

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THANKS FOR YOUR ATTENTION !