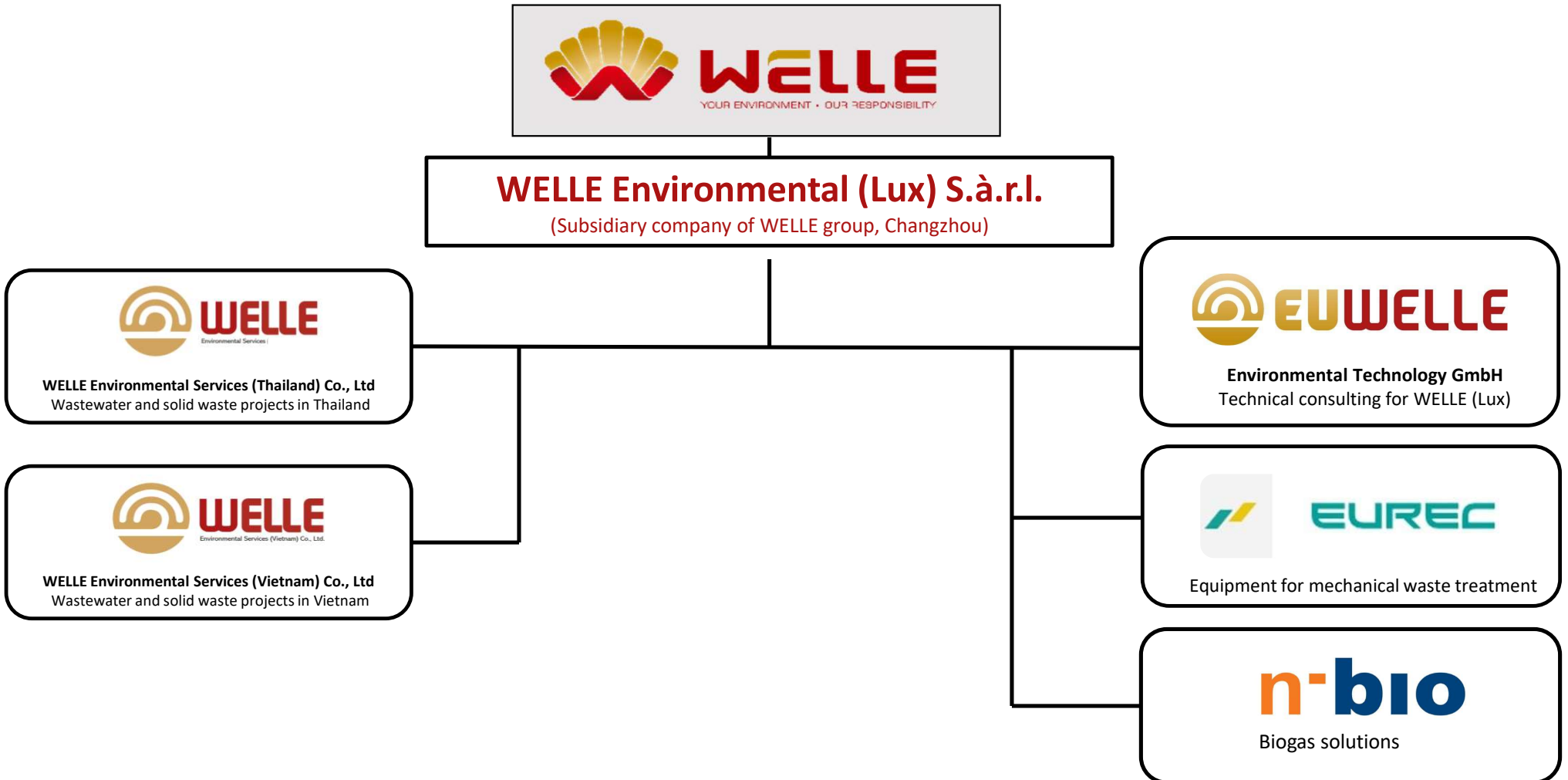


# Introduction of Mechanical – Biological Treatment solutions & Maximum Yield Technology<sup>®</sup>



# Company Introduction



- Targets of Mechanical-Biological Treatment plants
- Steps of Mechanical-Biological Treatment (Drying and Composting)
- Summary aerobic treatment
- Typical RDF Quality

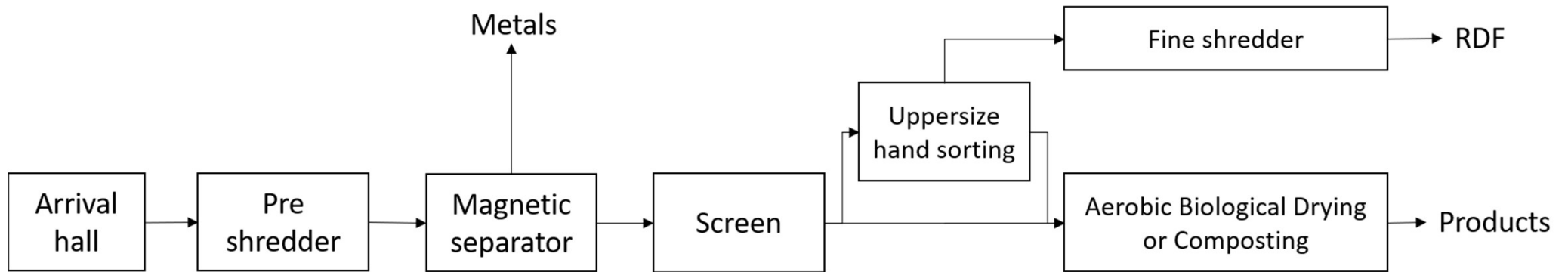
# Targets of MBT plants

- **Reduction of**
  - Landfilled waste
  - Uncontrolled production of LF gas
  - Odour & wastewater emissions
  - Wastewater to be treated
- **Improvement of**
  - Usage of valuables (recycling & energetical use)
  - Operation time and stability of LF
  - Aftercare of LF
- **Production of**
  - RDF
  - Biogas/ CNG
  - Soil improver





# General flow chart Mechanical Biological Treatment



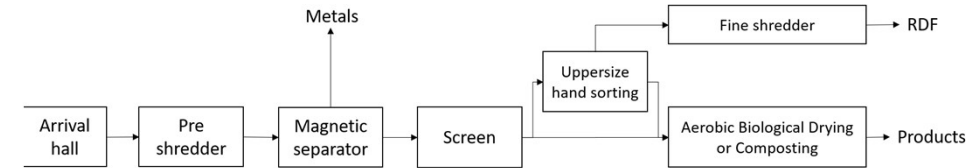
# Biological Drying and Composting

## Biological drying:

- Main goal: drying of material to increase CV/ production of RDF
- Contaminations (plastics) are no problem (increase CV)

## Composting:

- Main goal: production of high quality compost/ soil improver
- Contaminations (plastics) are a problem → expensive separation equipment needed



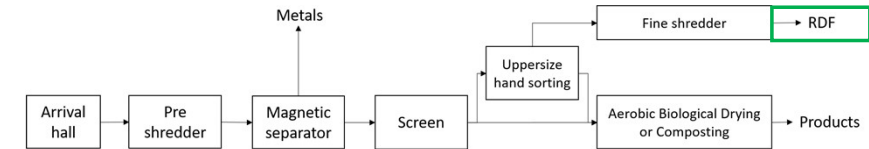
# Summary aerobic treatment

Aspects	Open heap composting	Membrane technology	Box technology
Time needed composting	90 – 270 days	30 - 45 days	18 – 25 days
Time needed drying	> 90 days	12 – 15 days (< 20 % MC)	8 – 9 days (< 20% MC)
Output	Compost/ RDF	Compost/ RDF	Compost/ RDF
Land needed	Large area	Large area	Less area
Weather conditions	Impact of weather	Less impact of weather	No impact of weather
Invest/ process costs	- / -	0 / 0	+ / +
Volume capacity	Low – medium	Low – medium	Medium – high





# Typical RDF Quality



- RDF1 – high calorific
  - Mainly plastics
  - CV ~ 14 to >22 MJ/kg
- RDF2 – middle calorific
  - Dried organics with plastic containments
  - CV ~ 10-16 MJ/kg

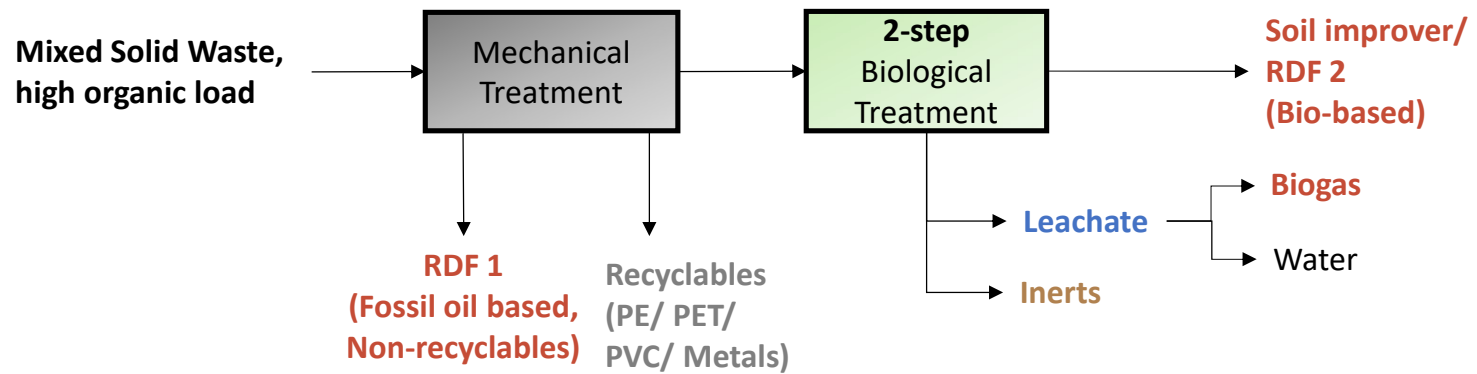


- Introduction to Maximum Yield Technology® (MYT®)
- Process and Objectives
- Products of the MYT process
- Reference MYT Projects

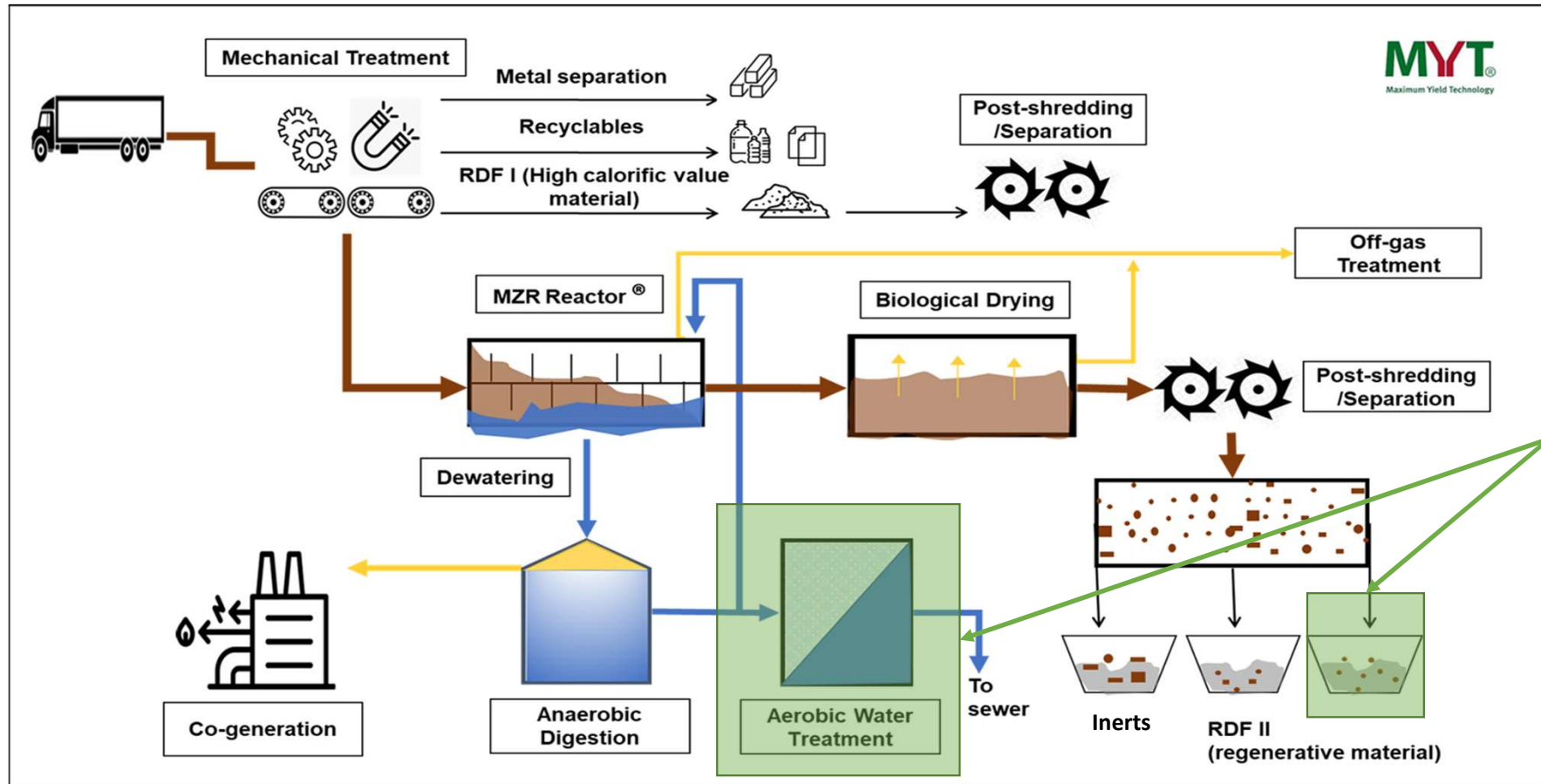
# Introduction MYT®



Process  
concept of

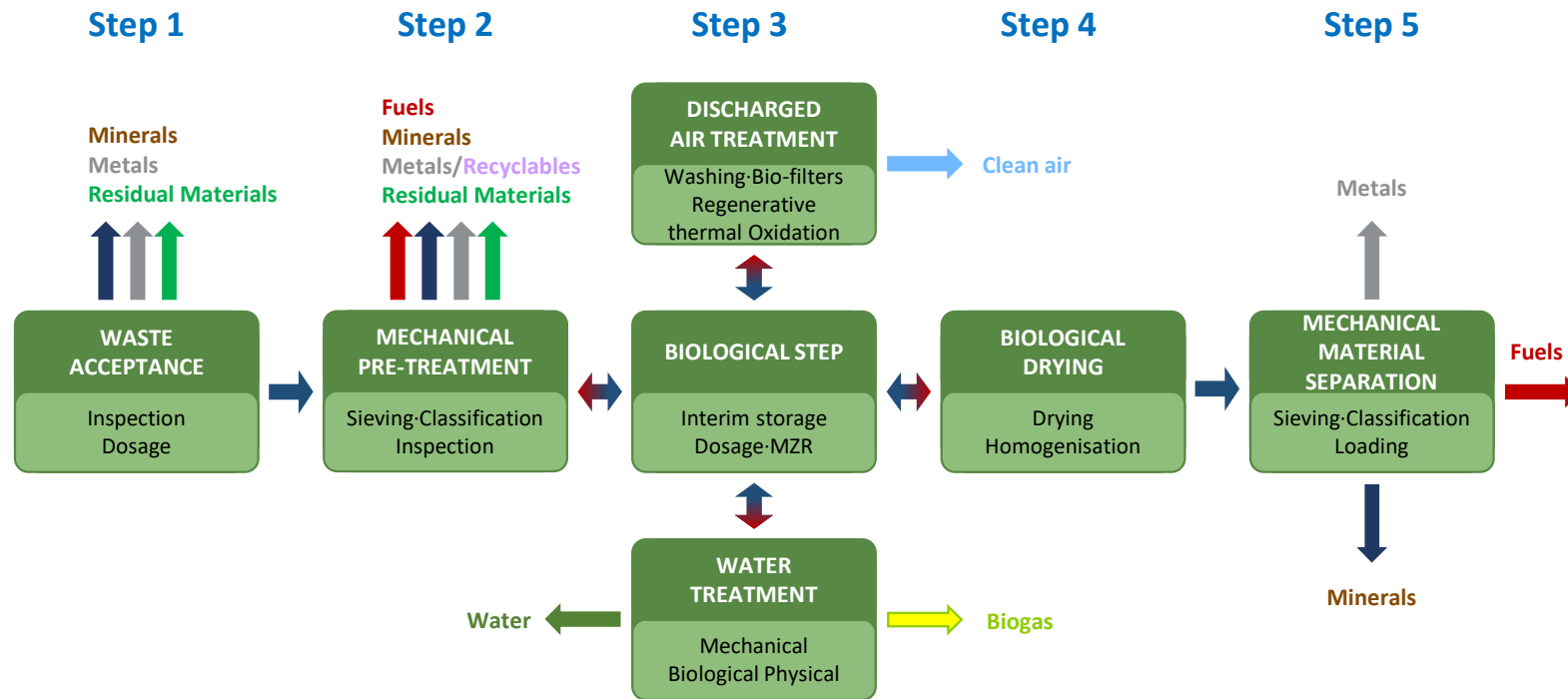


# MYT® Process and Objectives





# MYT® Process and Objectives



# Products of the MYT® Process

## Comparison of the quality parameters of MYT® substitute fuel (after biodrying) with coal (lignite)

Parameter	Unit	MYT®-RDF	Dry lignite (1)
Calorific value	MJ/kg	14.7	20.2
Water content	%	9.3	12.0
Sulphur	%	0.5	1.2
Carbon content	%	39.0	53.0
- of which is biogenic carbon	%	66.6	0.0
Oxygen	%	20.8	21.1
Nitrogen	%	1.5	0.6
Hydrogen	%	5.3	4.3
Ash	%	32.2	7.2



**RDF 0-4 mm**  
11 – 12 MJ/kg



**RDF 4-8 mm**  
13 - 14 MJ/kg



**RDF 8-40 mm**  
14- 16 MJ/kg

1) Origin: Lower Lusatia region, Germany.

Prices 15-45 \$/t

# Possible Revenues

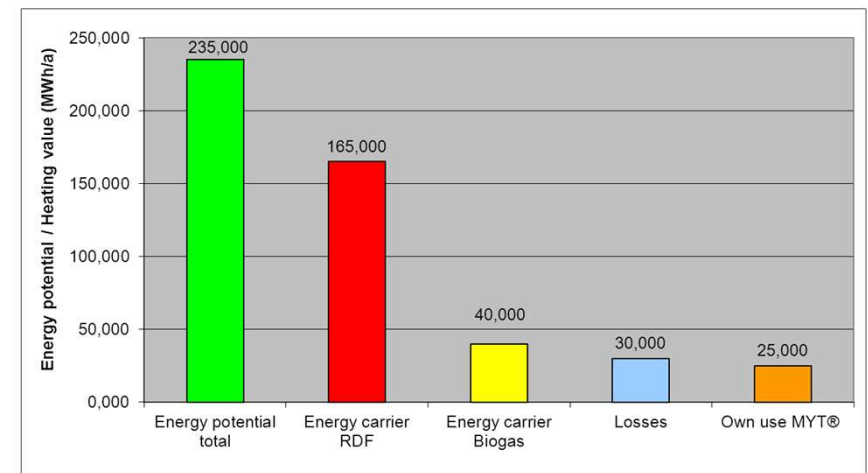
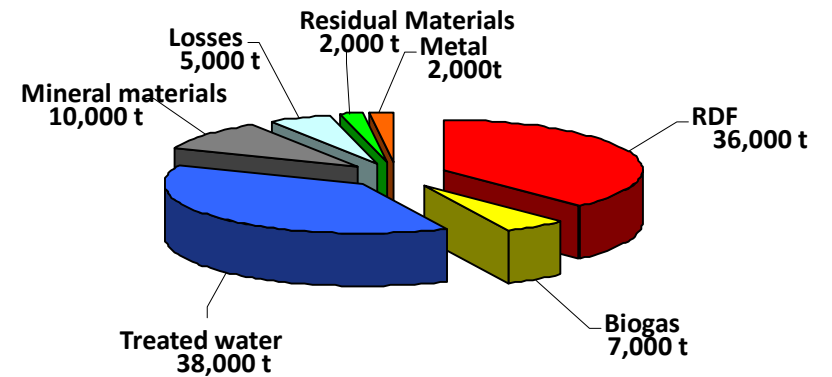
Product	Price range
RDF	15 – 45 USD/t
Electricity from biogas	0,07 – 0,15 USD/kWh
CNG	1,0-1,5 USD/kg
Soil improver	10 – 40 USD/t










# Products of the MYT® Process

Products generated at MBT Kahlenberg from the treatment of about 100,000 Tons of waste/a

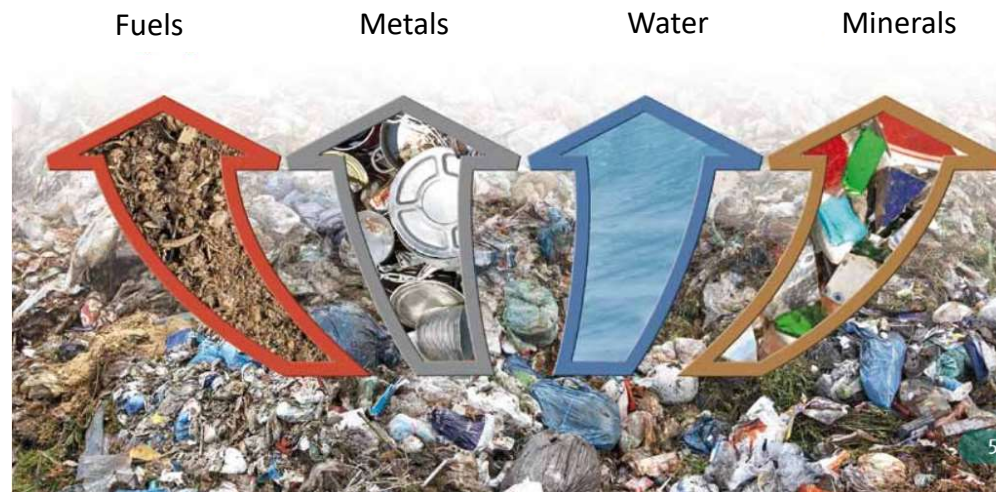


# References MYT®

No.	Year	Name of Project	Location	Supplier	Scope of Supply	Capacity	Status
7	2020	Jiading wet waste treatment project	Shanghai, China	 WELLE	complete equipment supply, installation,	200 t/d of kitchen waste	Installation
6	2020	Wet Waste Treatment for Jinshan Solid Waste Comprehensive Utilization Project	Shanghai, China	 WELLE	design, supply, installation of all process equipment,	100 t/d food waste + 150 t/d kitchen waste + 10 t/d waste oil	Installation
5	2020	Songjiang wet waste utilization project	Shanghai, China	 WELLE	mechanical treatment+ MZR percolation + AD	150 t/d kitchen waste + 100 t/d food waste + 10 t/d waste oil	Commissioning
4	2020	MSW Treatment Plant at On-nut MSW Management Center	Bangkok, Thailand	 WELLE	mechanical treatment+ MZR percolation + AD	800 t/d MSW	Commissioning
3	2015	Hangzhou Tianziling Kitchen Waste Treatment Demonstration Project	Hangzhou, China	 WELLE	mechanical treatment+ MZR percolation + AD + biological drying	50 t/d Kitchen Waste	Operating
2	2015	MYT® plant SYMEVAD	Hénin-Beaumont, France	SYMEVAD administration union	mechanical treatment+ MZR percolation + AD + biological drying + postseparation	80,000 t/a MSW + 20,000 t/abulky waste per year	Operating
1	2006	ZAK MYT Project	Ringsheim, Germany	MYT BU	mechanical treatment+ MZR percolation + AD + biological drying + postseparation	100,000 t/a MSW	Operating

# Conclusions

- Avoidance of 120 – 300m<sup>3</sup> CH<sub>4</sub> per Mg treated MSW (compared to LF)
  - Avoidance of 0.5 Mg CO<sub>2</sub> per Mg RDF (compared to fossil fuels)
  - Decrease of landfilled amount of up to 90%
- Less emissions (odour & waste water) & hazards for environment & people





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# THANK YOU

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