TECHNISCHE UNIVERSITÄT WIEN
Vienna University of Technology

Christian Doppler Forschungsgesellschaft

Beiträge der Abfallverbrennung zu Urban Mining

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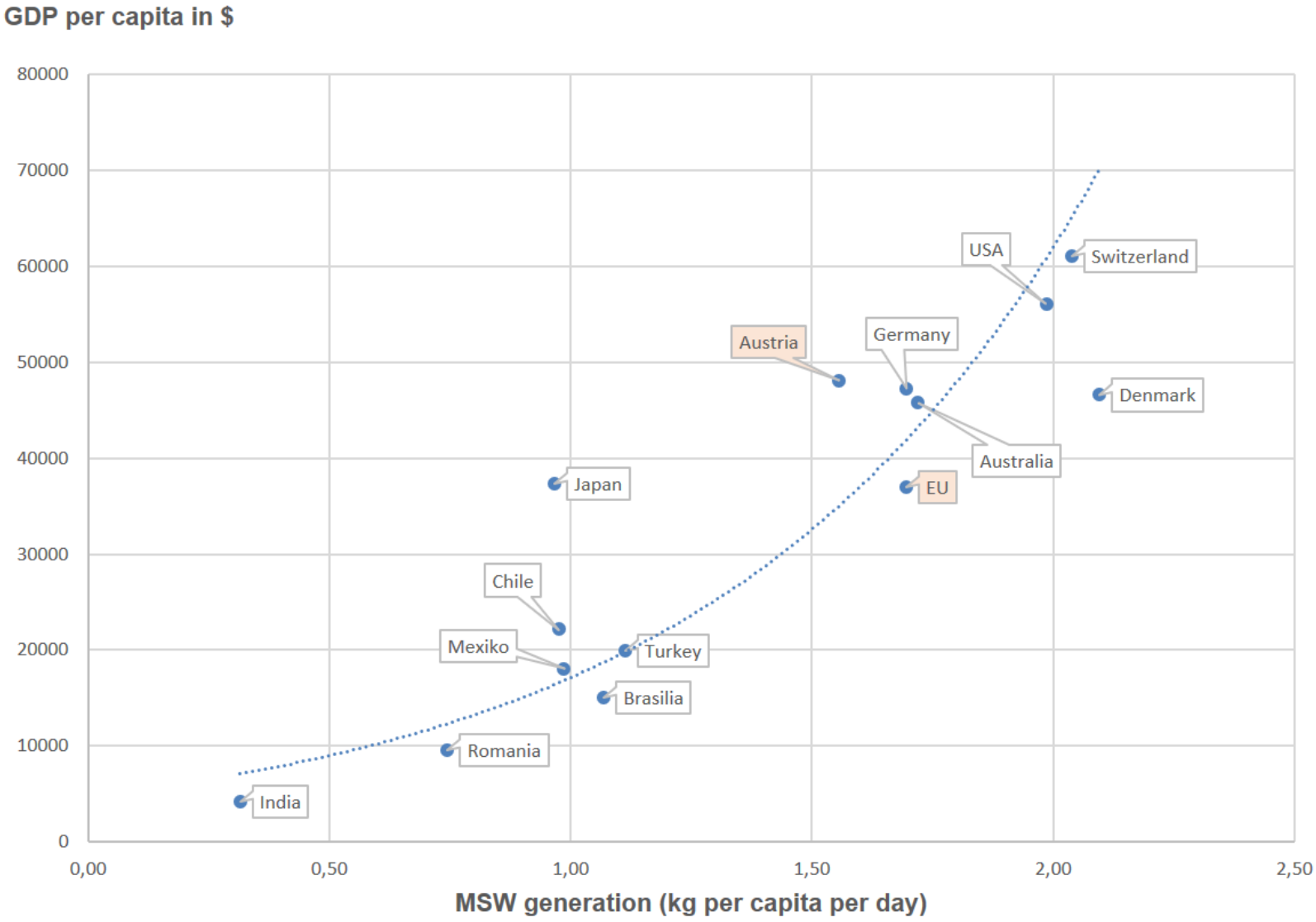
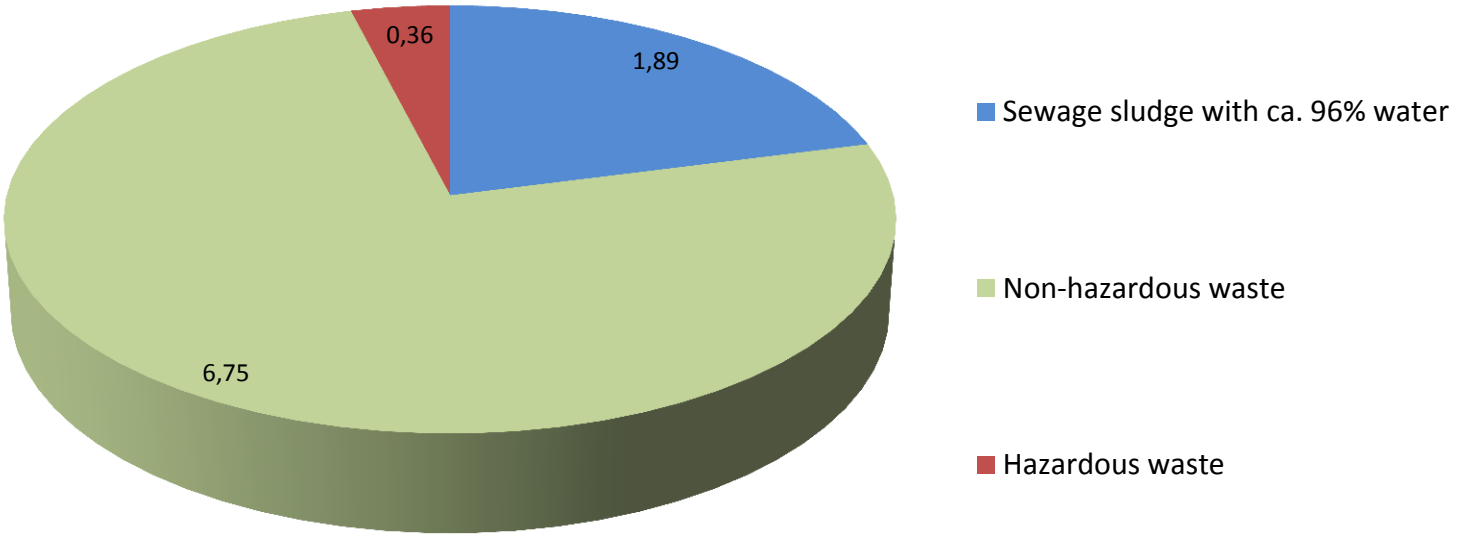
Waste generation



Source: OECD Data 2015

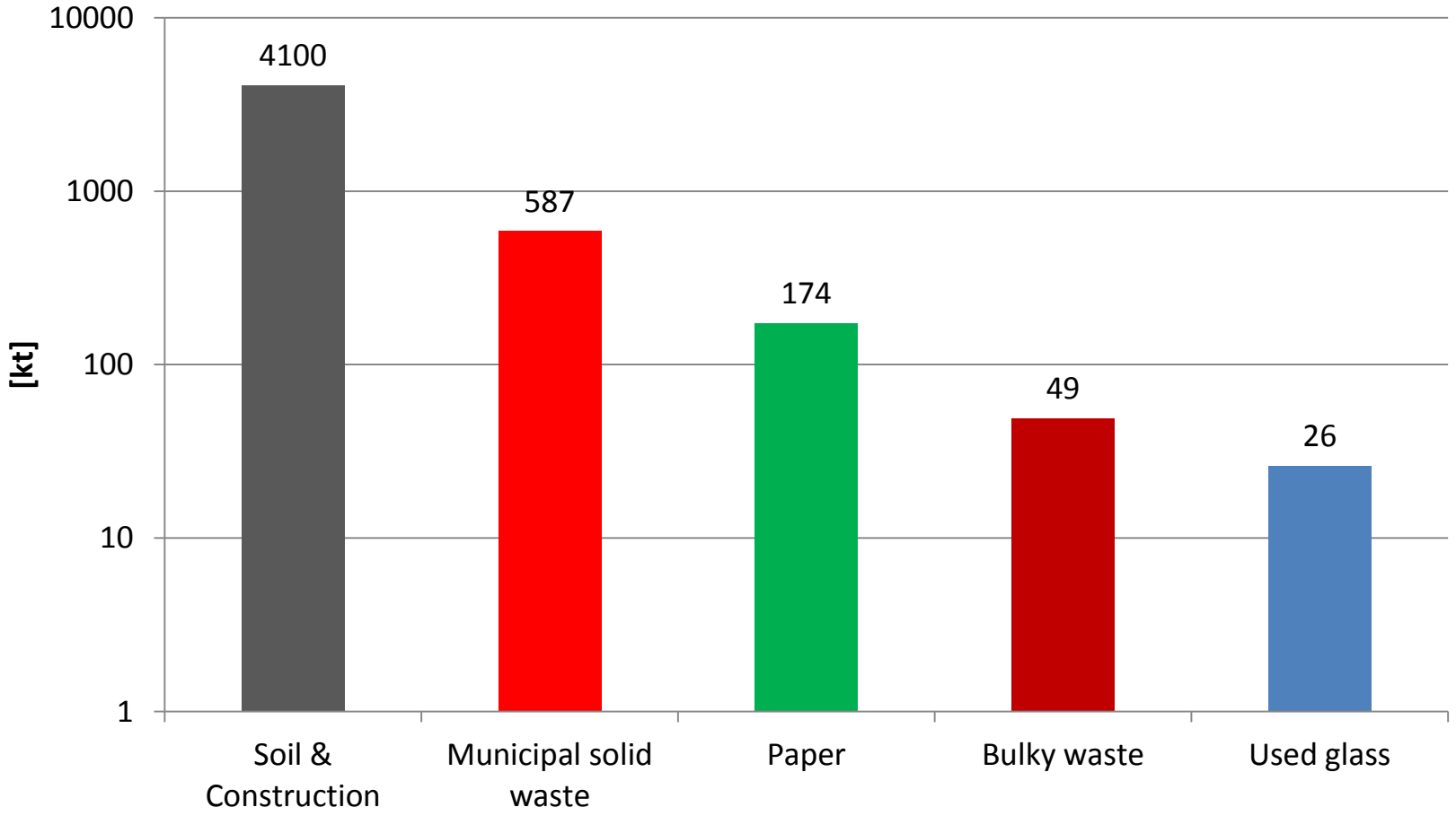
Vienna – capital of Austria

- 1.7 million inhabitants
- 9 million t of waste annually (2009)

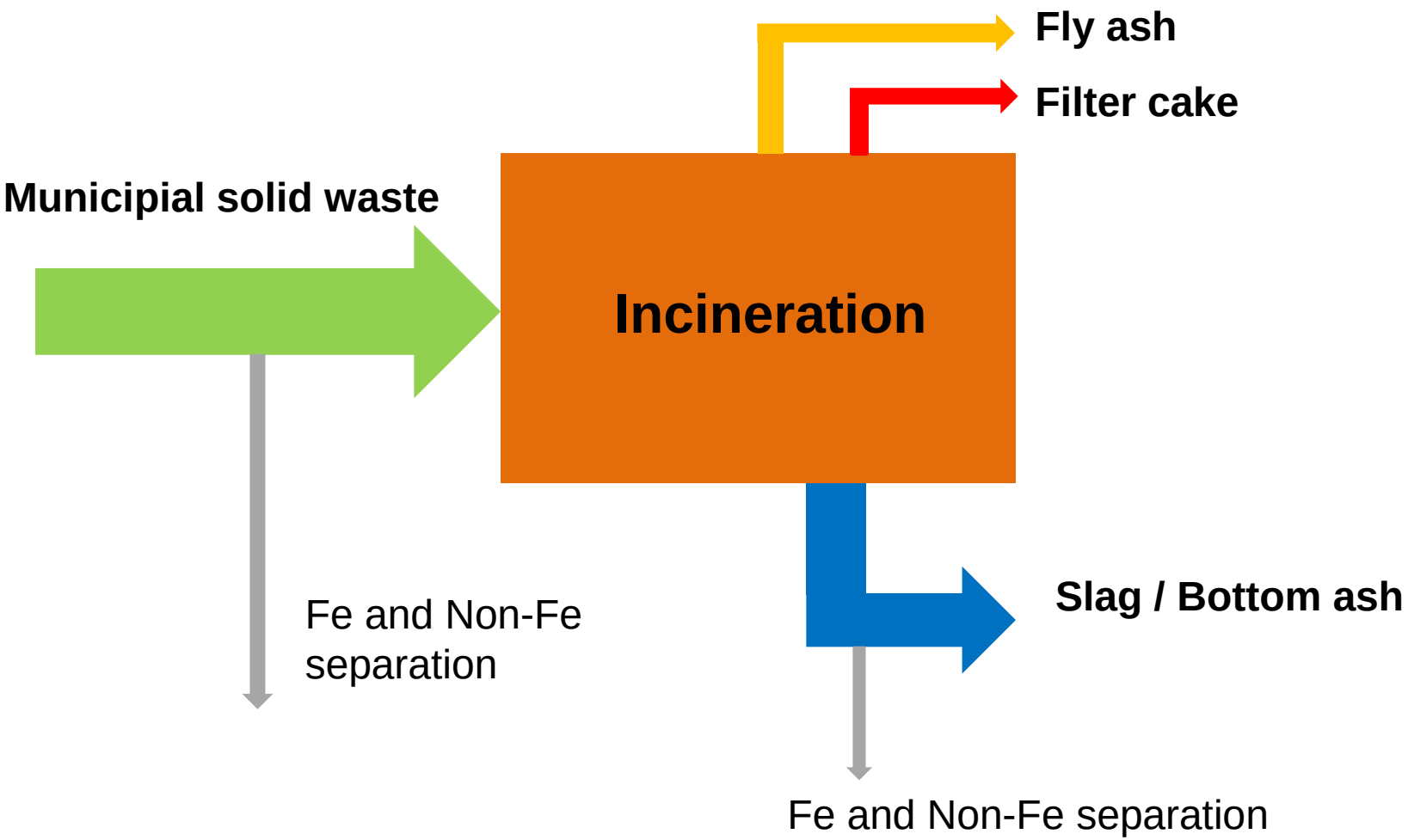


In million t, data based on Viennese Waste Mangement Report 2012

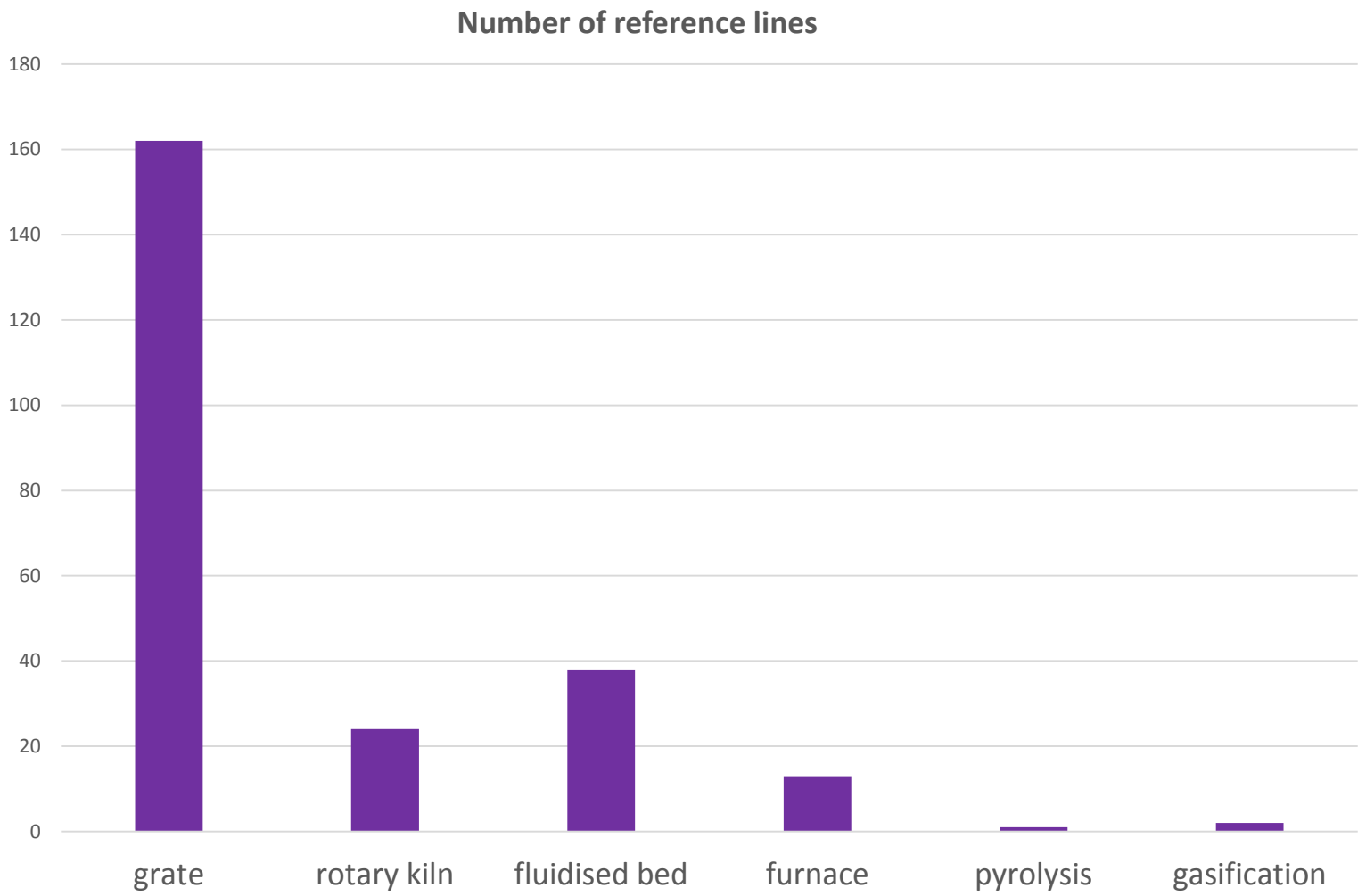
Vienna – non-hazardous waste



In kilo t, data based on Viennese Waste Mangement Report 2012

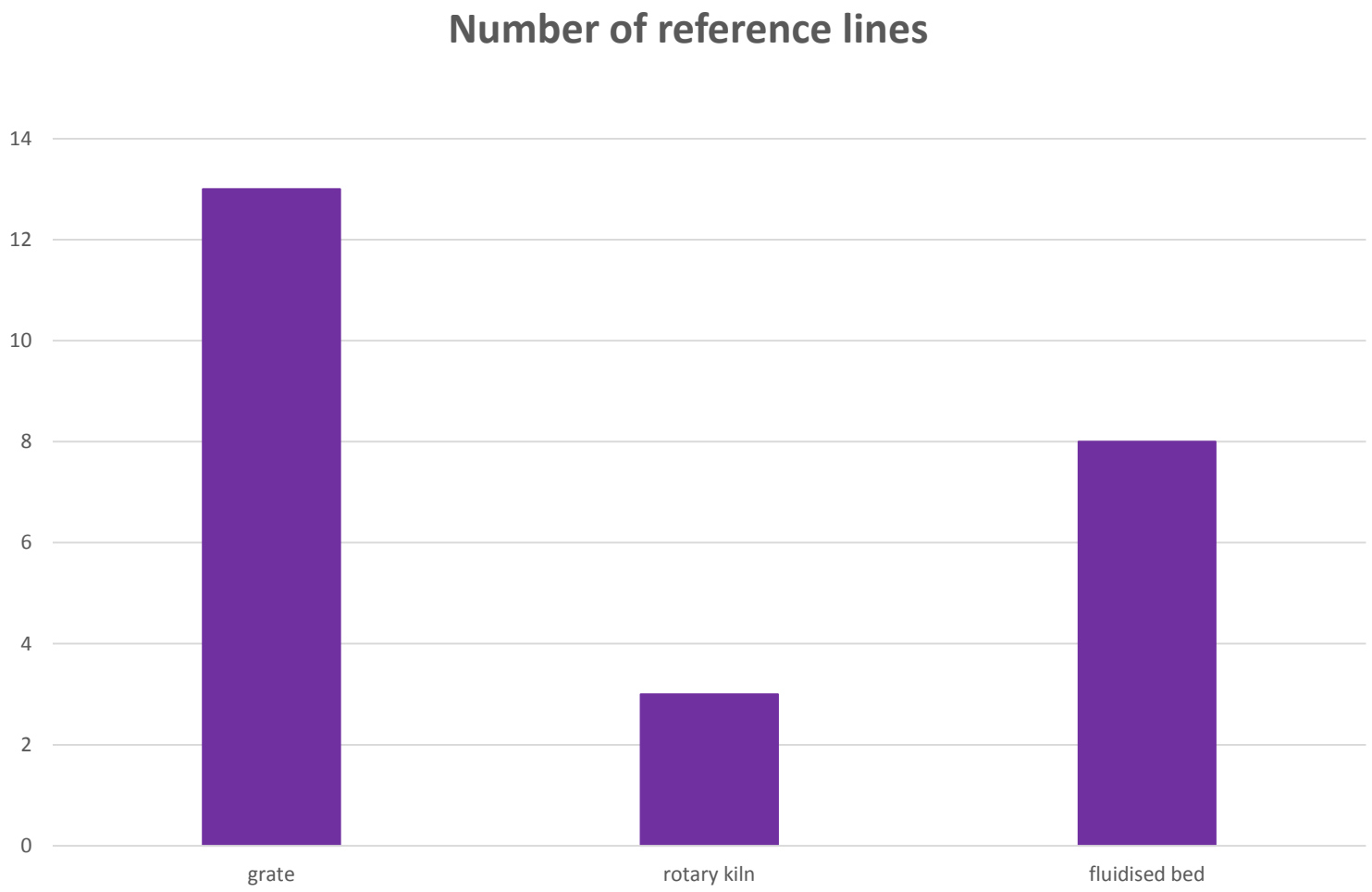

Fly ash
Filter cake
Municipial solid waste
Incineration
Fe and Non-Fe separation
Slag / Bottom ash
Fe and Non-Fe separation

Europe



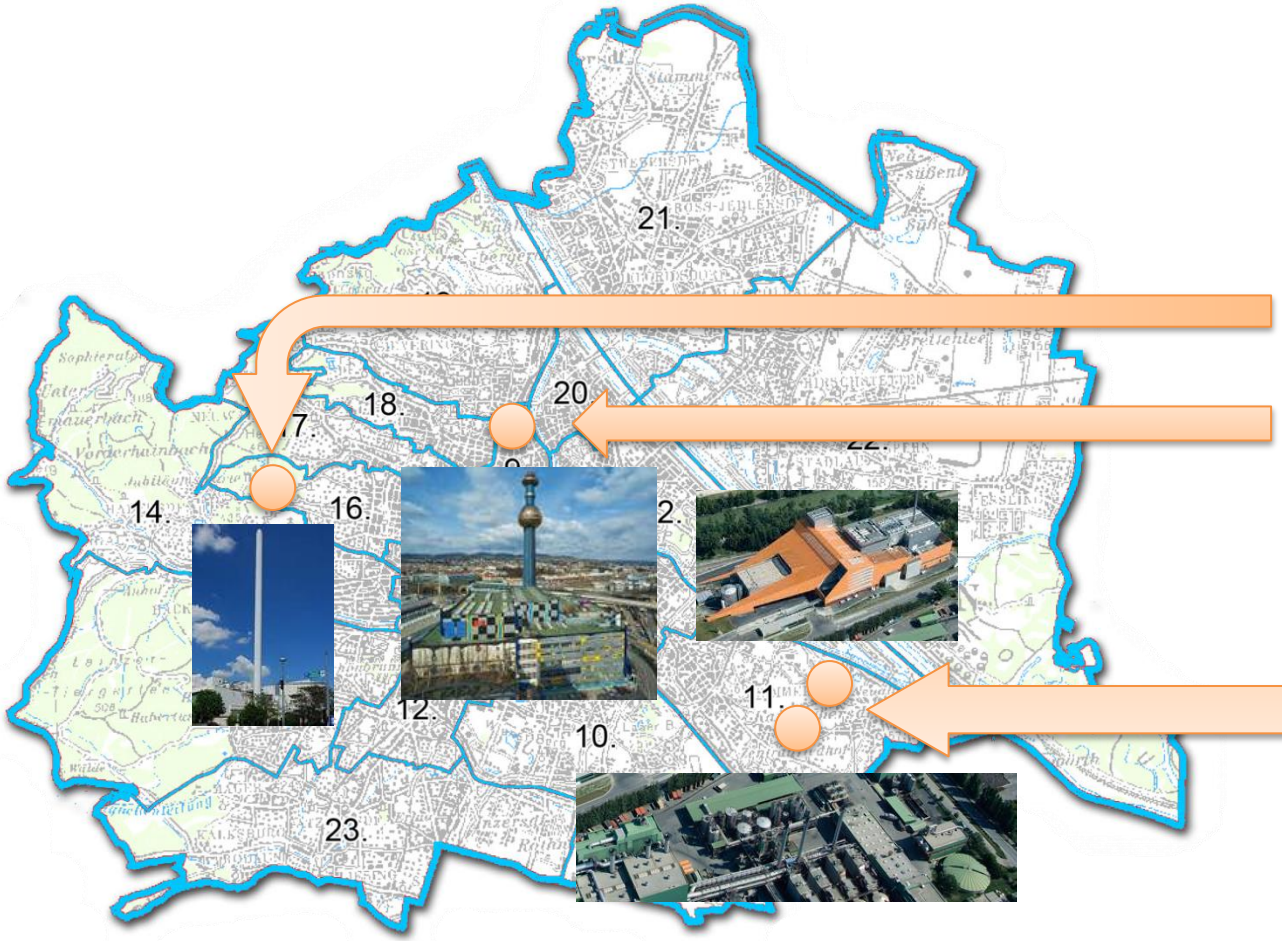
Source: Review of the BREF for Waste Incineration 2016, Gleis M., Waste Management Vol. 6

Austria



Source: H. Stoiber, Umweltbundesamt, DepoTech 2016

Vienna's Waste Incineration Cluster



~10^6 t of waste are incinerated in Vienna each year

4 incineration sites with 13 lines

Anthropogenic Resources

MVA Spittelau overview

- Incineration lines: 2
- Kapazität: 250.000 t/a
- Power: thermal: 58 MW
  electric: 15 MW
- Grate furnace

- Flue gas cleaning: baghouse filter with activated coke injection, scrubber 1, scrubber 2, SCR-plant

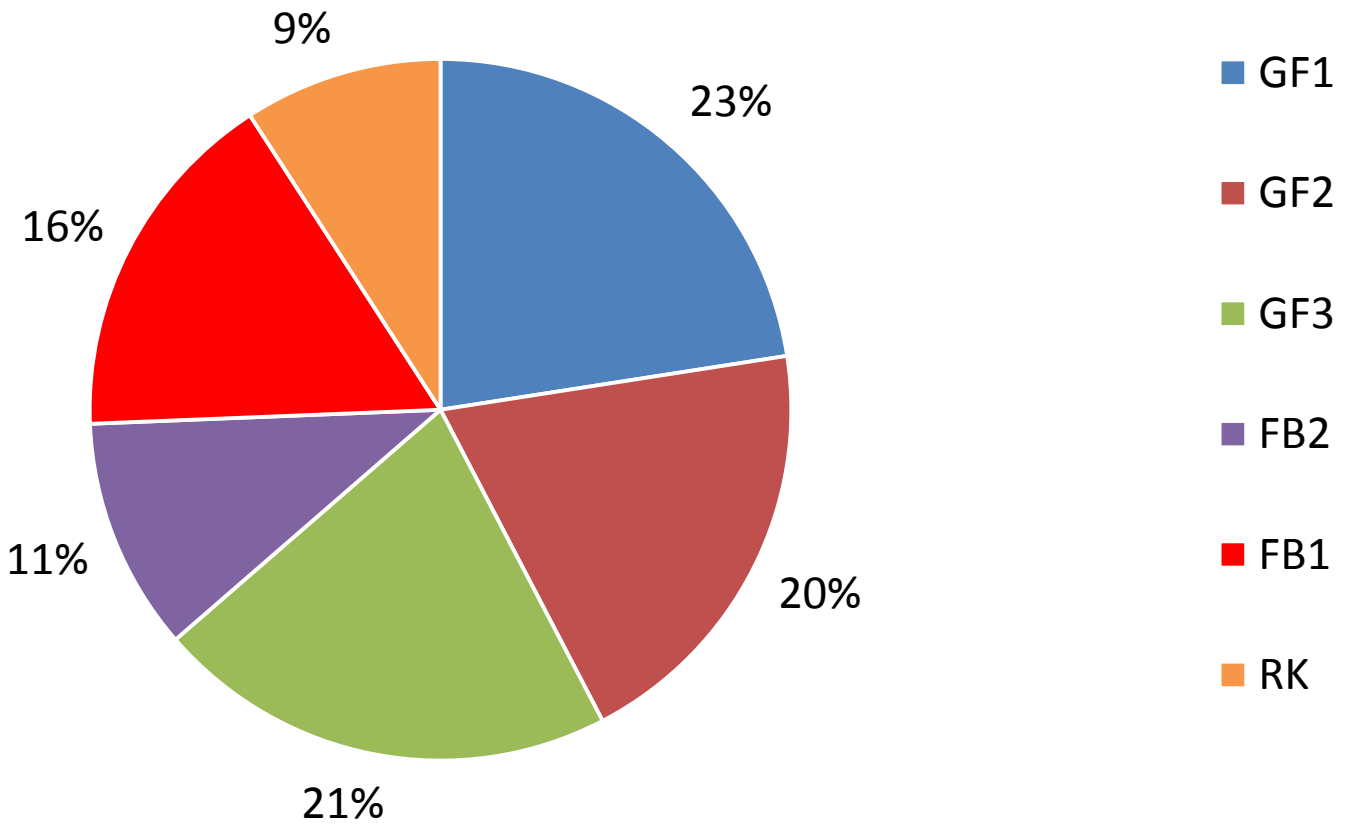
RHKW Linz

- Incineration lines: 1
- Capacity: 200.000 t/a waste
  50.000 t/a sewage sludge
- Power: thermal: ca. 45 MW
  electric: ca. 15 MW
- Fluidized Bed Combustion

- Flue gas cleaning: cyclone, baghouse filter with activated coke injection, scrubber 1, scrubber 2, SCR-plant

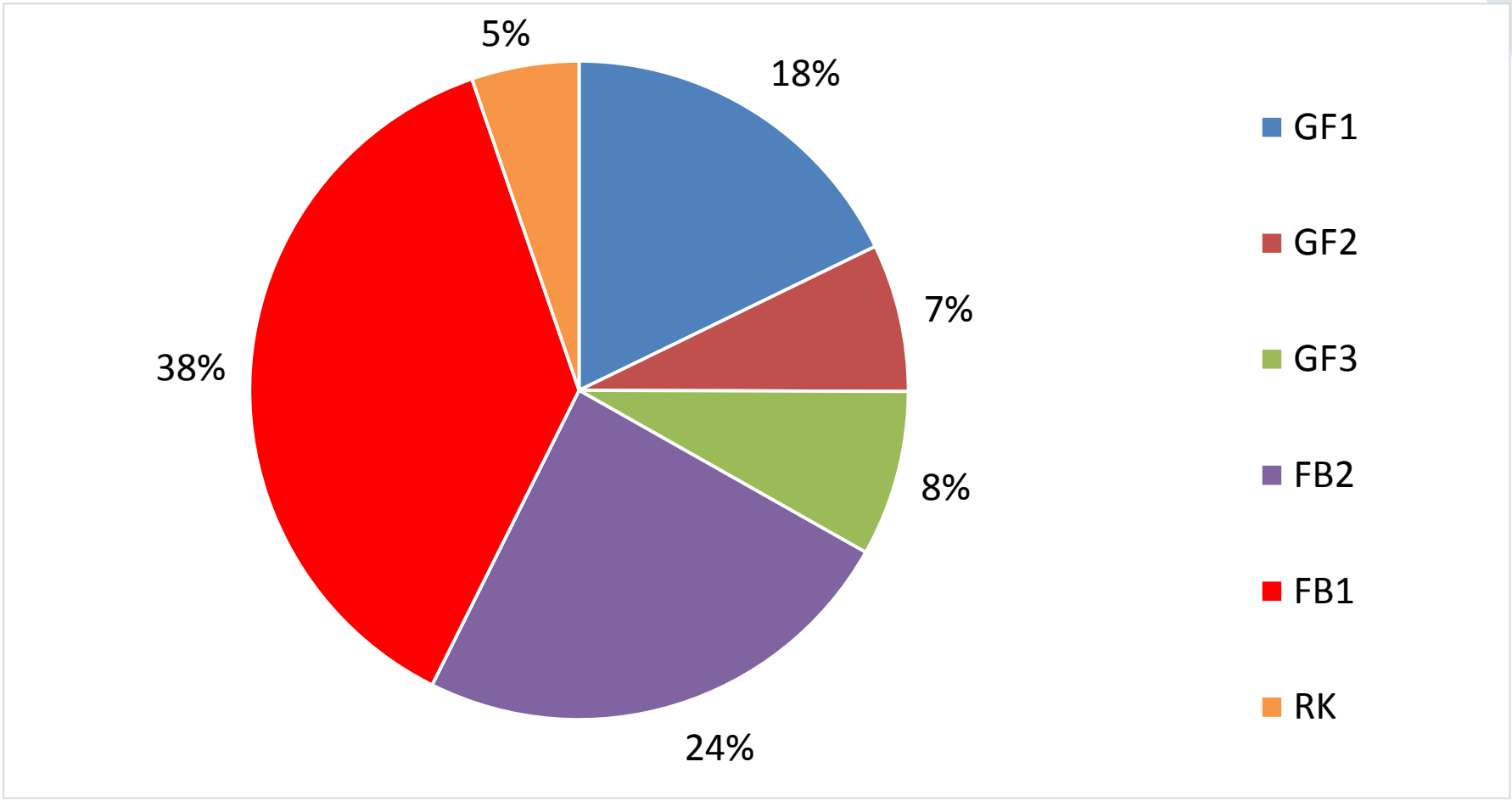
- Special: combined combustion of MSW and sewage sludge,
  The MSW is treated and homogenized in a waste treatment plant

Waste allocation in Vienna



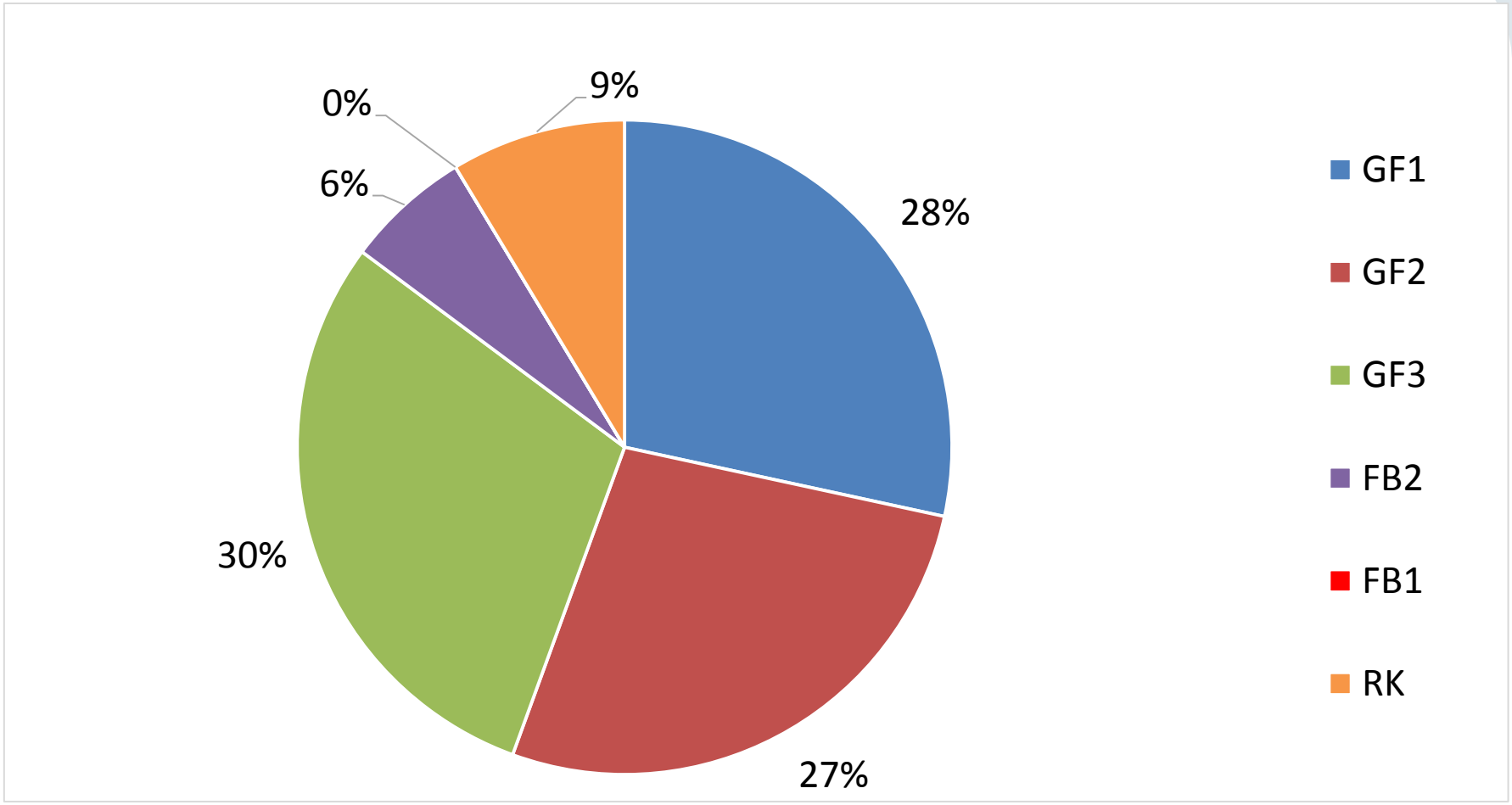
Approx. 1,025.000. t of waste/a

Fly ash allocation in Vienna



approx. 45.000 t of fly ash/a

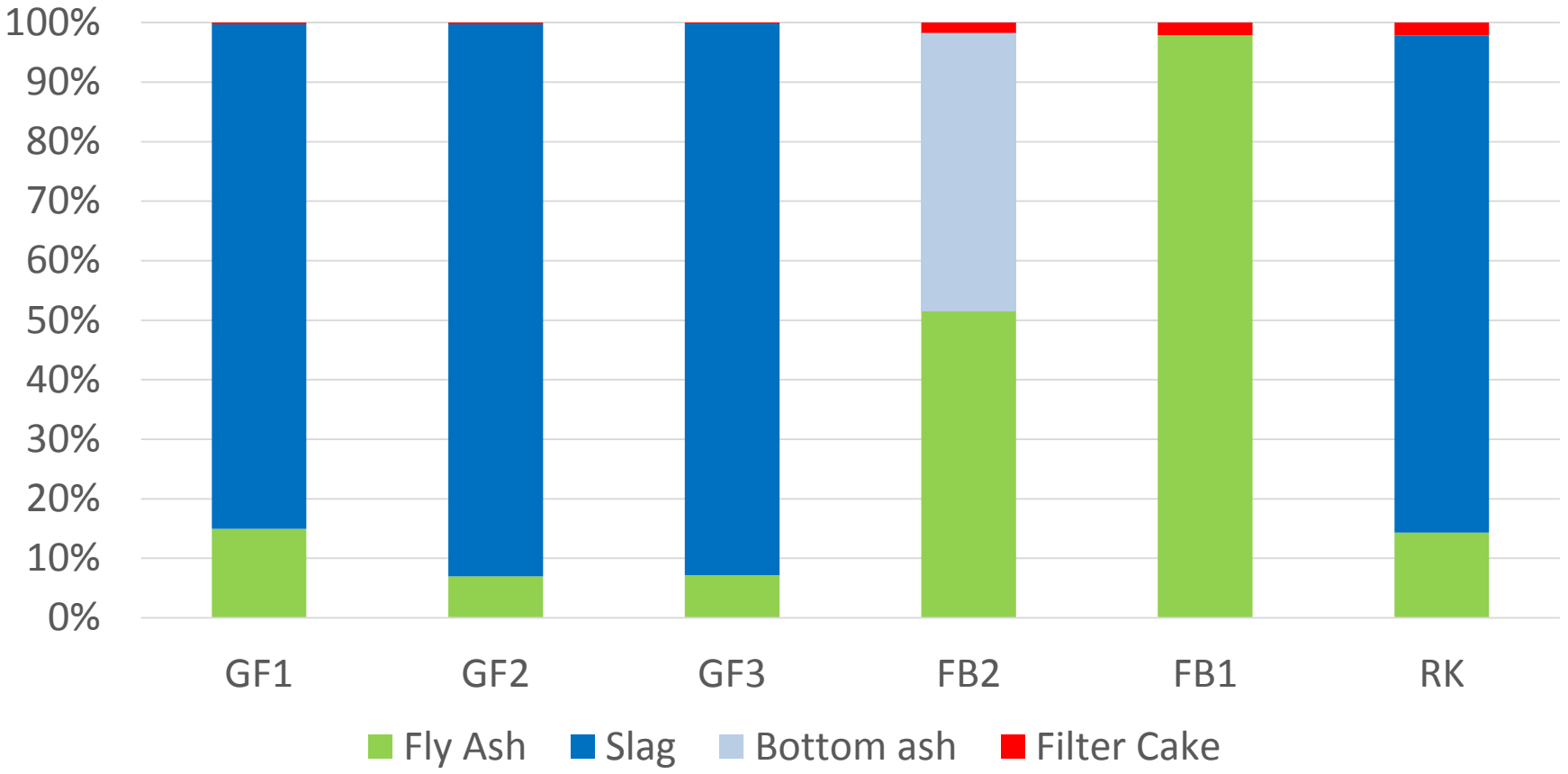
Slag / bottom ash allocation in Vienna



approx. 160.000 t of slag and bottom ash/a

Anthropogenic Resources

Waste incineration residues in Vienna

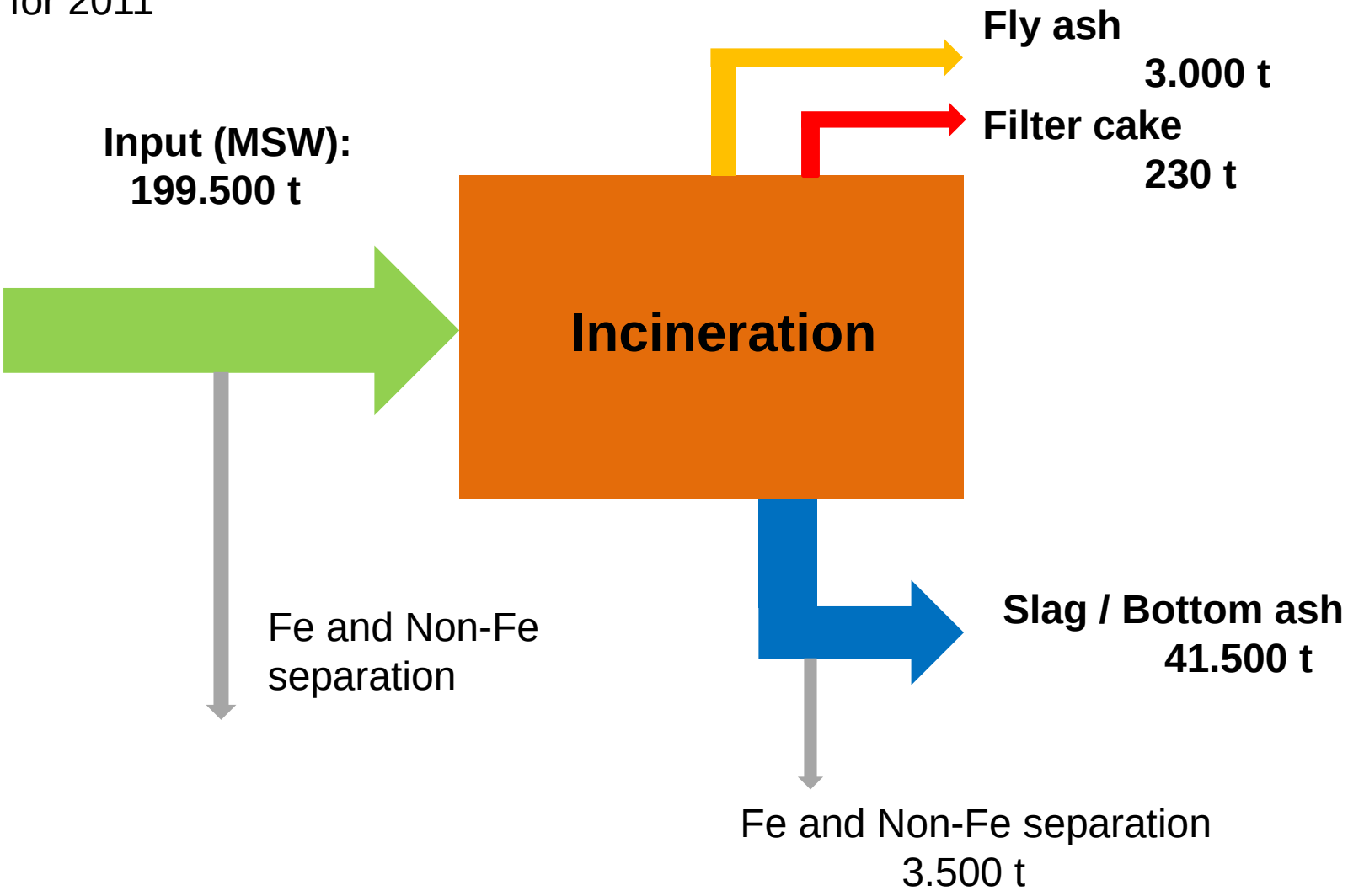


Without separated metals

approx. 160.000 t of slag and bottom ash/a
approx. 45.000 t of fly ash/a
approx. 1.500 t of filter cake/a

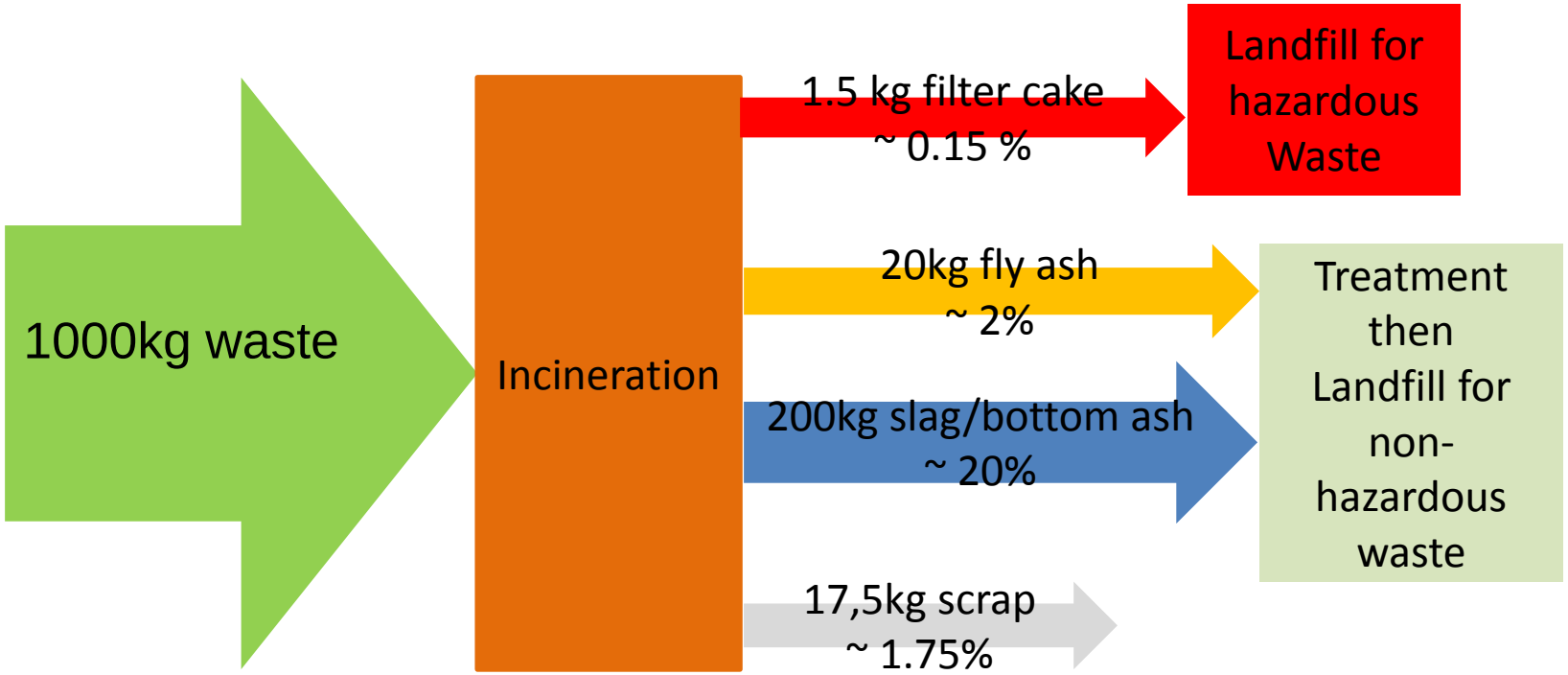
Waste to Energy and more: Example Spittelau

for 2011

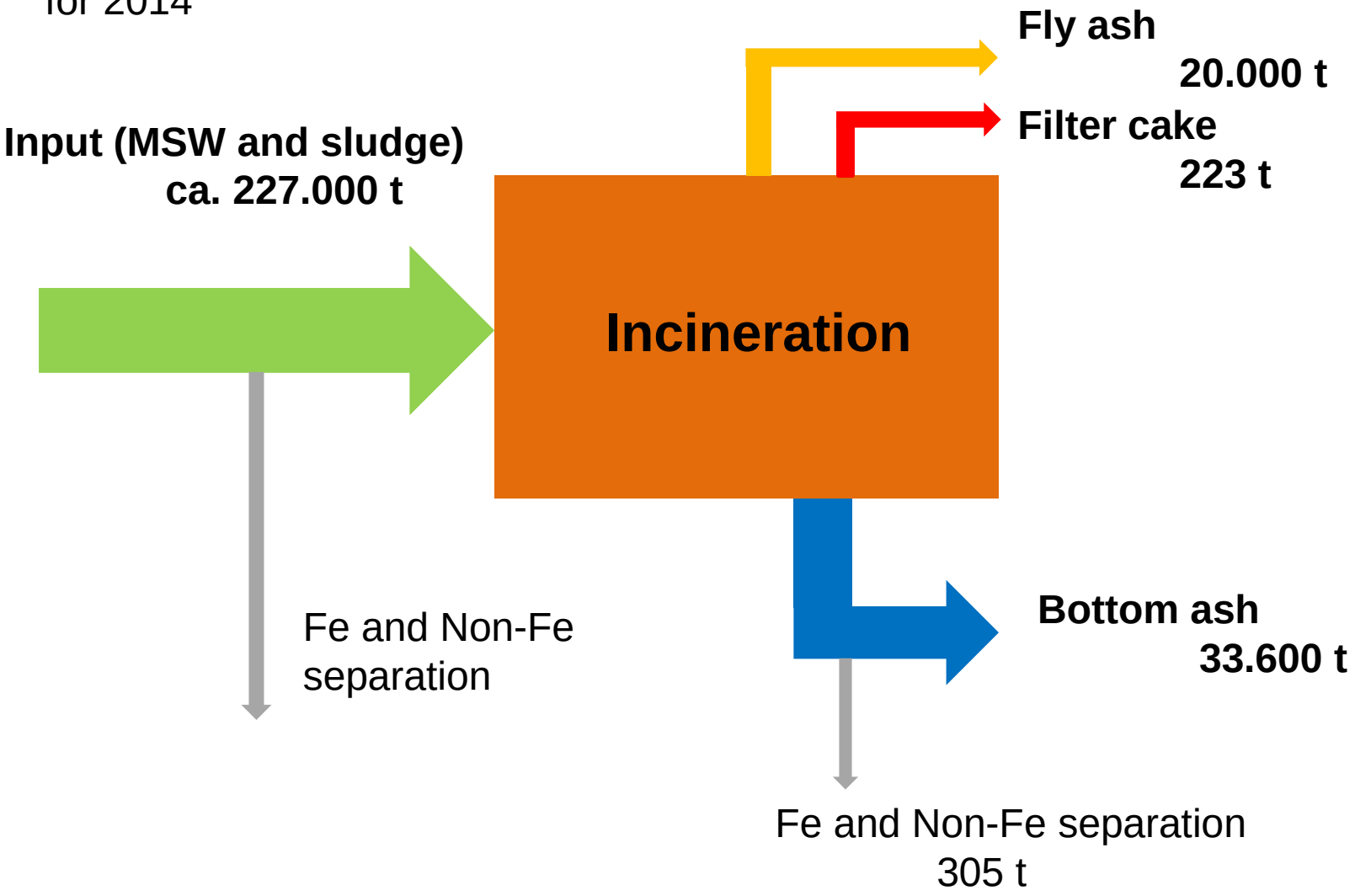


Source: Umwelterklärung 2014, Wien Energie

Mass reduction in Spittelau (Grate Furnace)

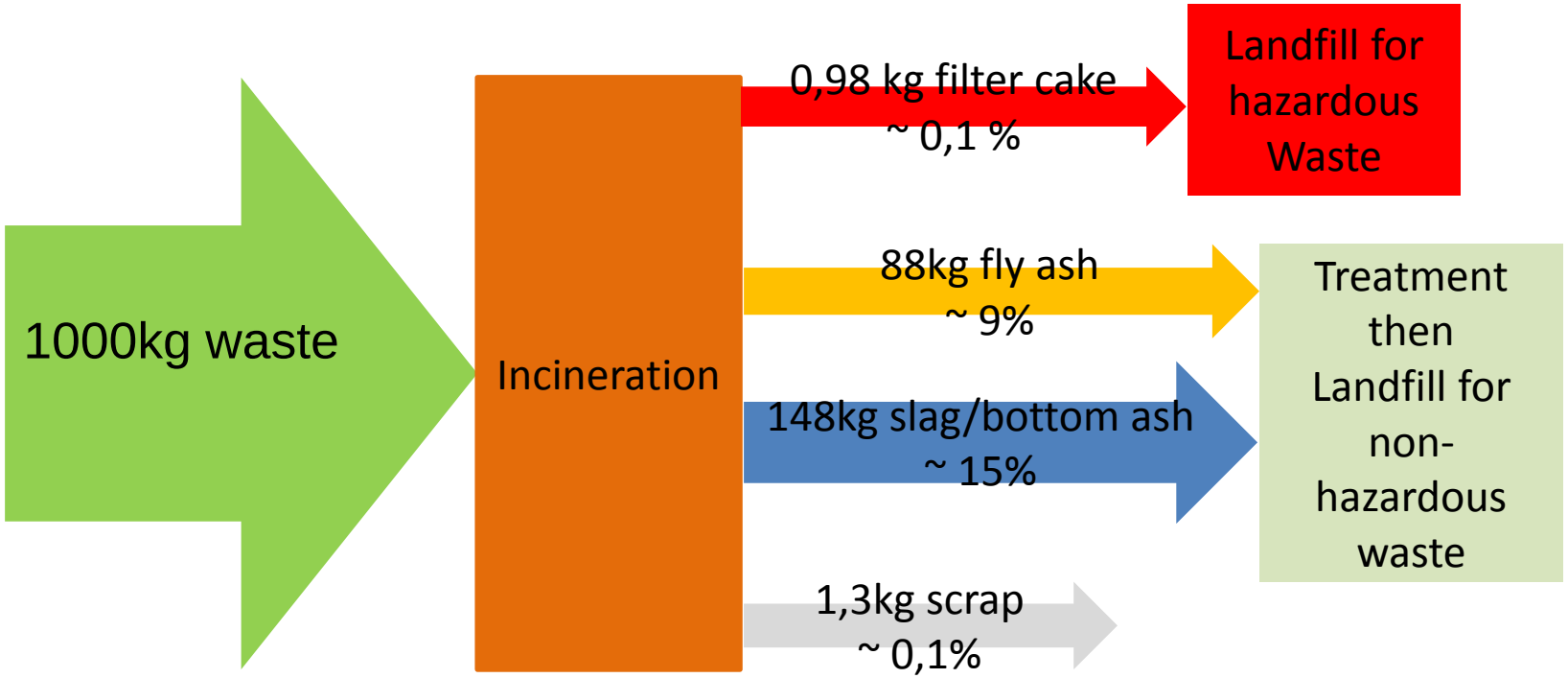


for 2014



Source: Umwelterklärung 2014, Linz AG Strom

Mass reduction in RHKW Linz (fluidized bed)



Conclusions

- significant reduction in the mass of the waste (up to about one fifth)
- significant reduction of the volume of the waste (up to about one tenth)
- destruction of organic content
- controlled concentration of pollutants in fly ash and filter cake (e.g. Cd, Zn)
- separation of metals from residues (Urban Mining)
- electricity and district heating generation

Acknowledgements

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Thank you for your attention!