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Material Value Chains

Life Cycle Assessment of Municipal Solid Waste Incineration Bottom Ash Utilization with Advanced Treatment

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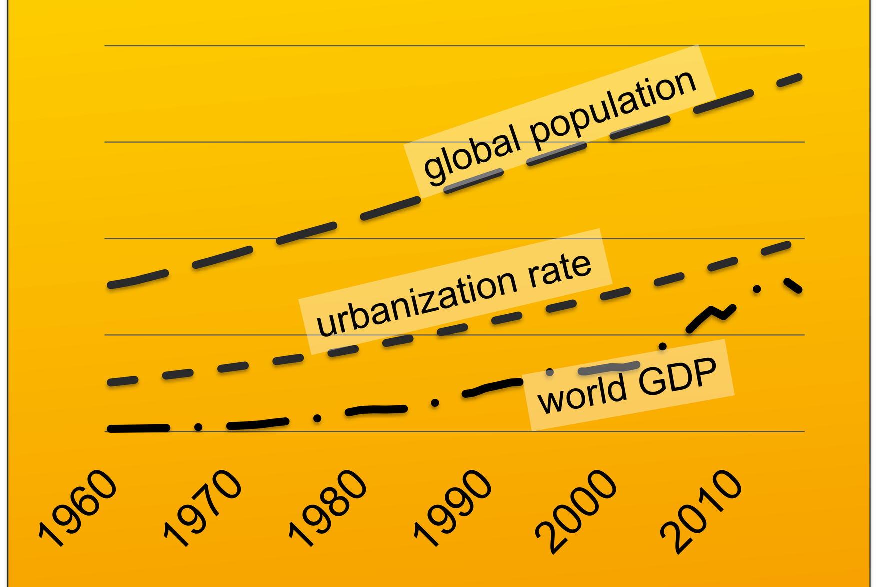
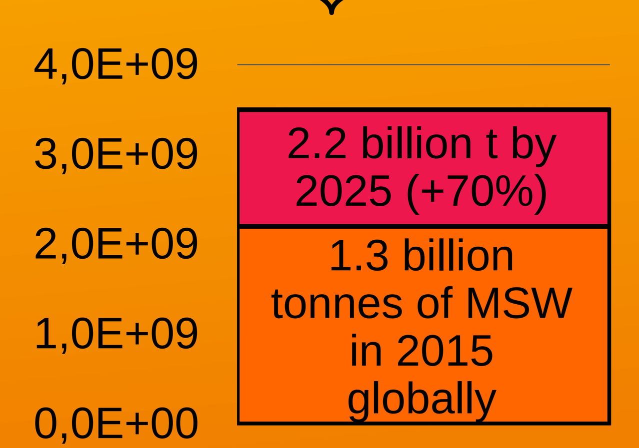
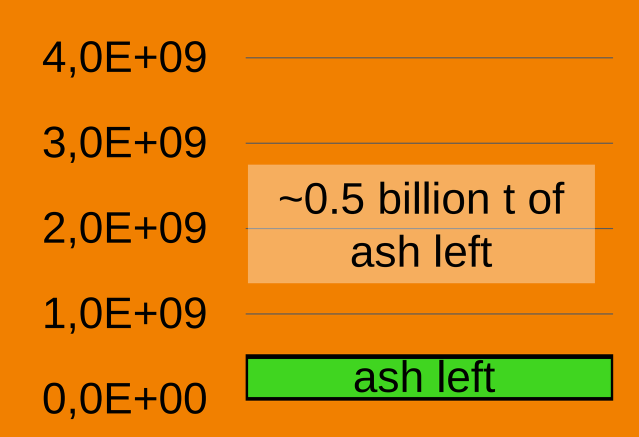
Problem statement



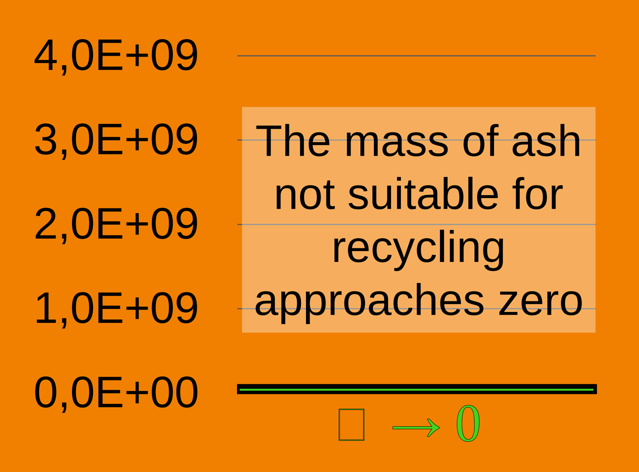
Waste generation



Waste incineration

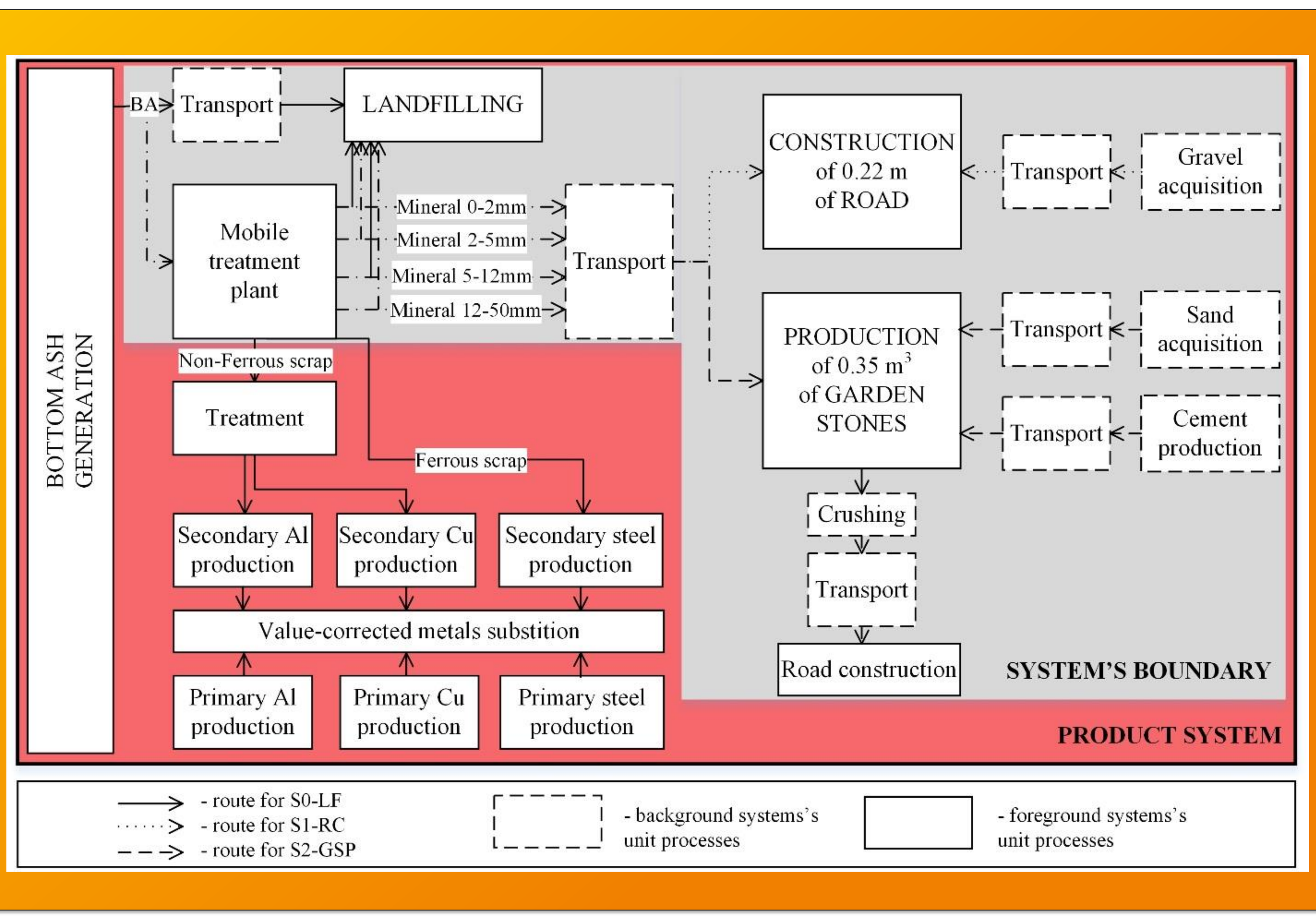


Ash recycling with Advanced Dry Recovery



Methods

- LCA study
- 1000 kg of bottom ash
- treatment with Advanced Dry Recovery
- the processes included are shown below
- Minerals recycled for
  - road construction (520 kg) or
  - garden stone production (130 kg)
- environmental impact compared to landfilling



Results and discussion

- road construction (S1-RC) was the best option. Mainly due to:
  - a) larger mass of minerals recycled
  - b) high amount of gravel avoided
  - c) reduced transportation needs
- garden stone production (S2-GSP) had additional impact. Mainly due to:
  - a) higher cement consumption (3 kg/130 kg minerals)
  - b) large transportation distance (200 km vs 5 km in S1-RC)
  - c) low substitution of sand
- mineral fraction 0-2mm constituted 60-90% of toxic impact from minerals