Paris Packaging Week – Paris
AEROBAL Aluminium Talk

The recycling of aluminium aerosol cans - Current and future perspectives

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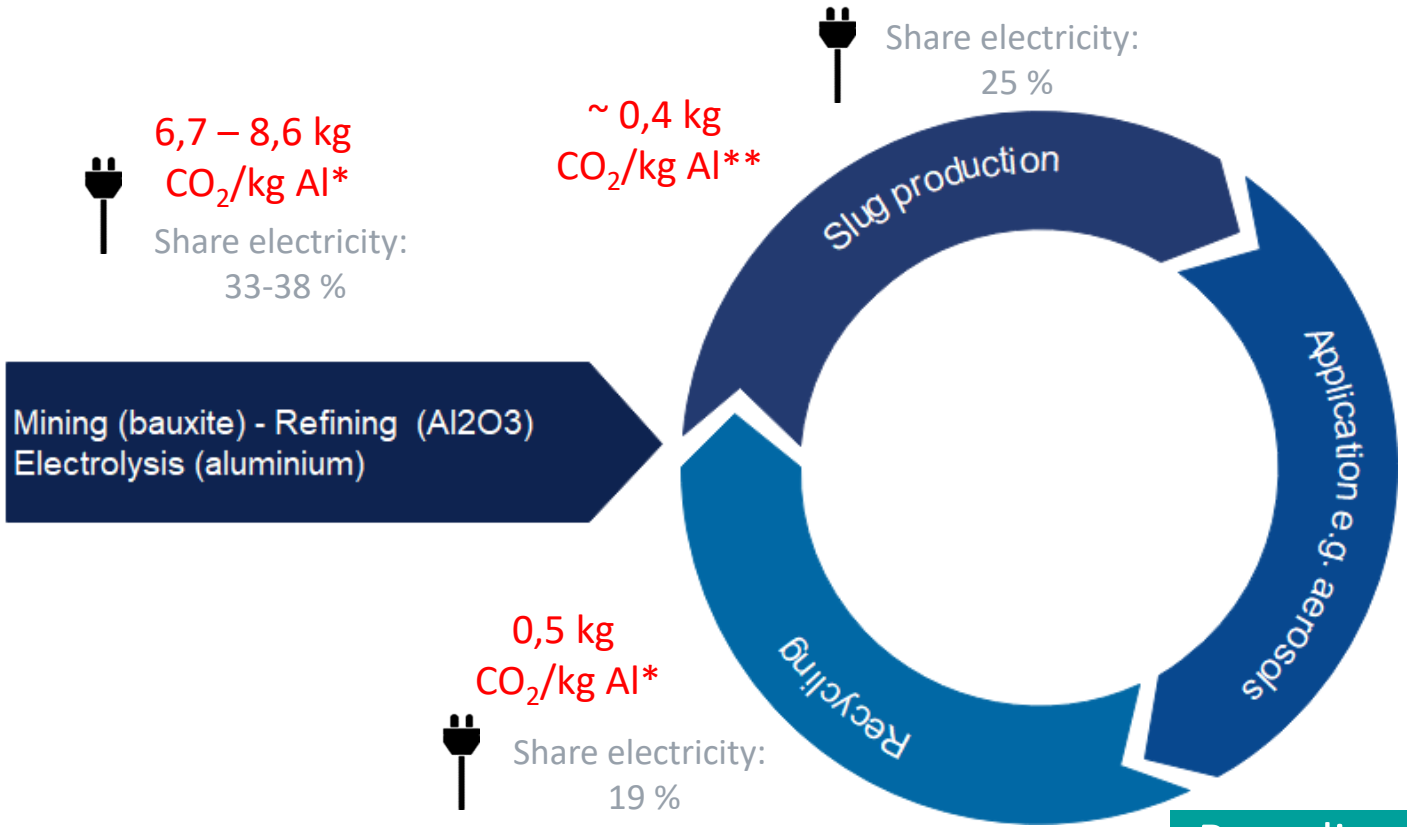
Aluminium Loop – Carbon Footprint – Electricity Demand

Slugs with low contribution



Contribution „slug“ CO_2-emissions about 5 percent within the Al loop

Contribution „electrolysis“ CO_2-emissions more than 90 percent within the Al loop

Applications are CO_2- relevant

Improvement potentials

CO2-neutral electricity supply (Green Deal)

Electrification of processes (“electricity“ instead of “gas”

Recycling of aluminium requires 5 percent of the energy compared to primary aluminium

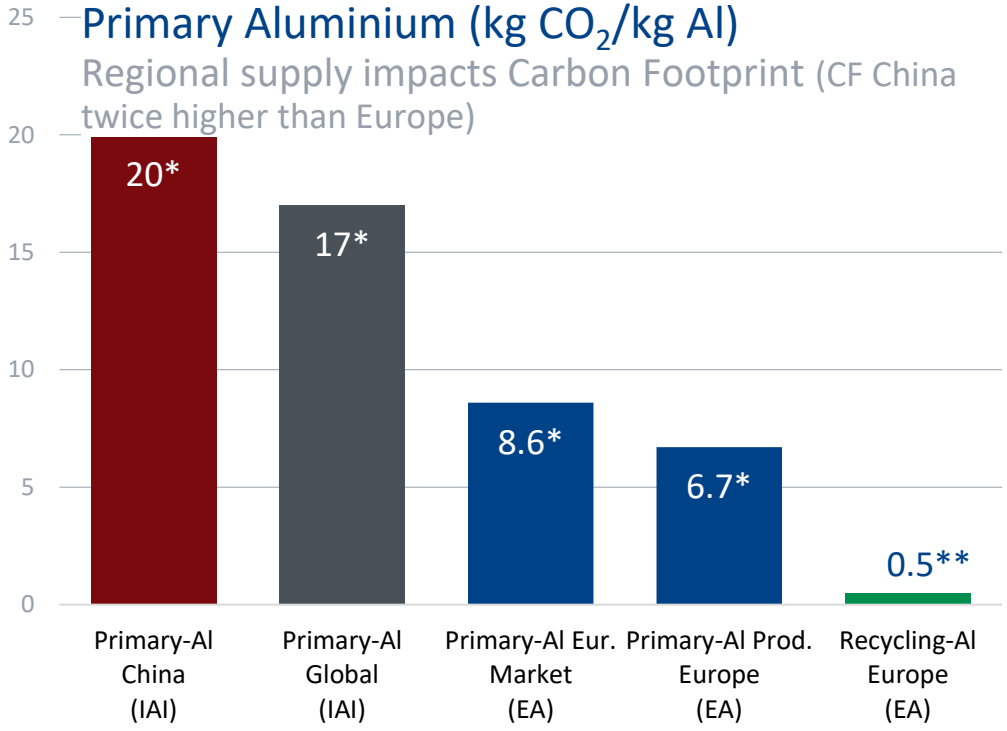
*European average (EA 2018) ** ASP/AD estimations

Decarbonisation of the Aluminium Supply Chain

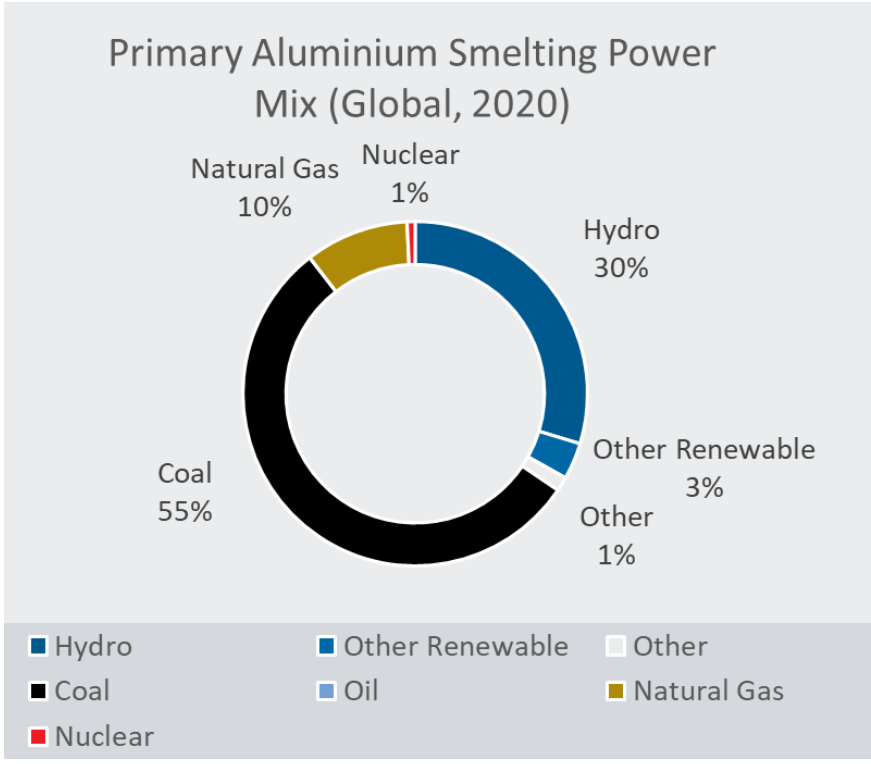
Recycling & renewable energy

Carbon Footprint – Primary Aluminium (kg CO_2/kg Al)

Regional supply impacts Carbon Footprint (CF China twice higher than Europe)



Recycling aluminium with the lowest Carbon Footprint



Increase production of aluminium on base of renewable energy sources (availability approx. 35 percent)

* scope 1, 2 and 3 - ** scope 1 and 2

European Aluminium (EA) and International Aluminium Institute (IAI) - 2018

https://international-aluminium.org/statistics/primary-aluminium-smelting-energy-intensity/ (last assessed 04th November 2021)

Limitations for Recycling Aluminium Claims

Scrap availability

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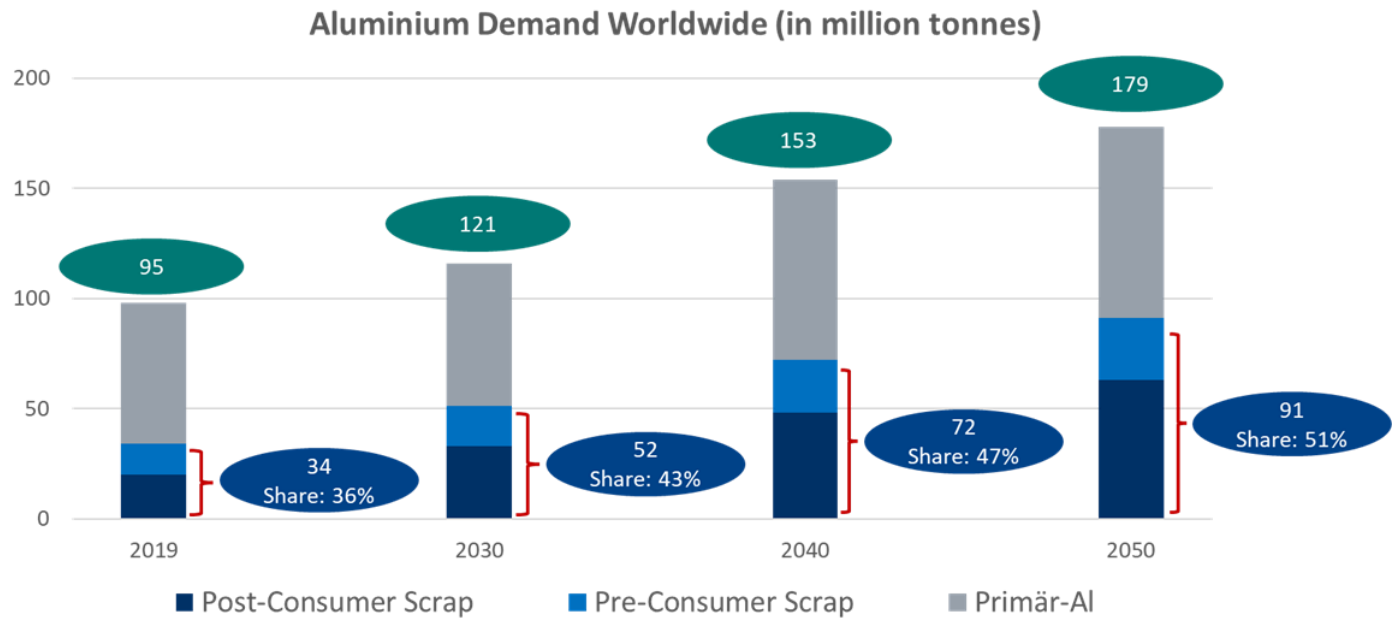
Reduction of Carbon Footprint

6,7 – 8,6 kg CO_2/kg Al

0,5 kg CO_2/kg A



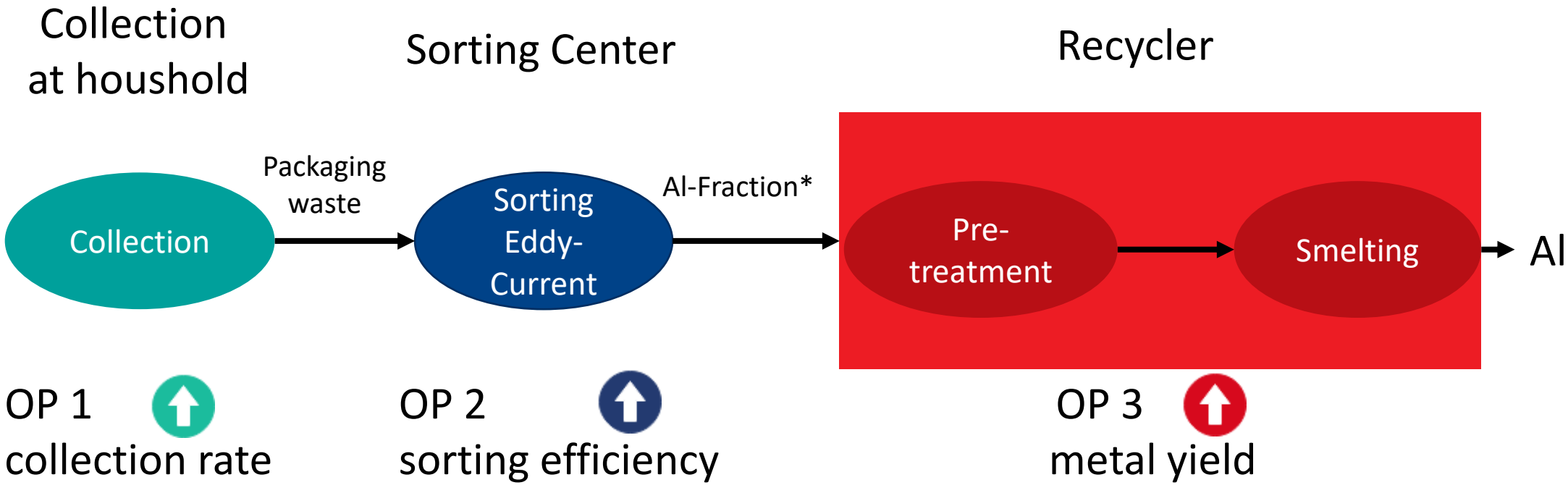
Demand for recycling aluminium increases

Availability of recycling aluminium about 36 percent (pre- and post consumer scrap) – In future no significant increase

https://alucycle.international-aluminium.org/public-access/

Optimization Potential - Recycling

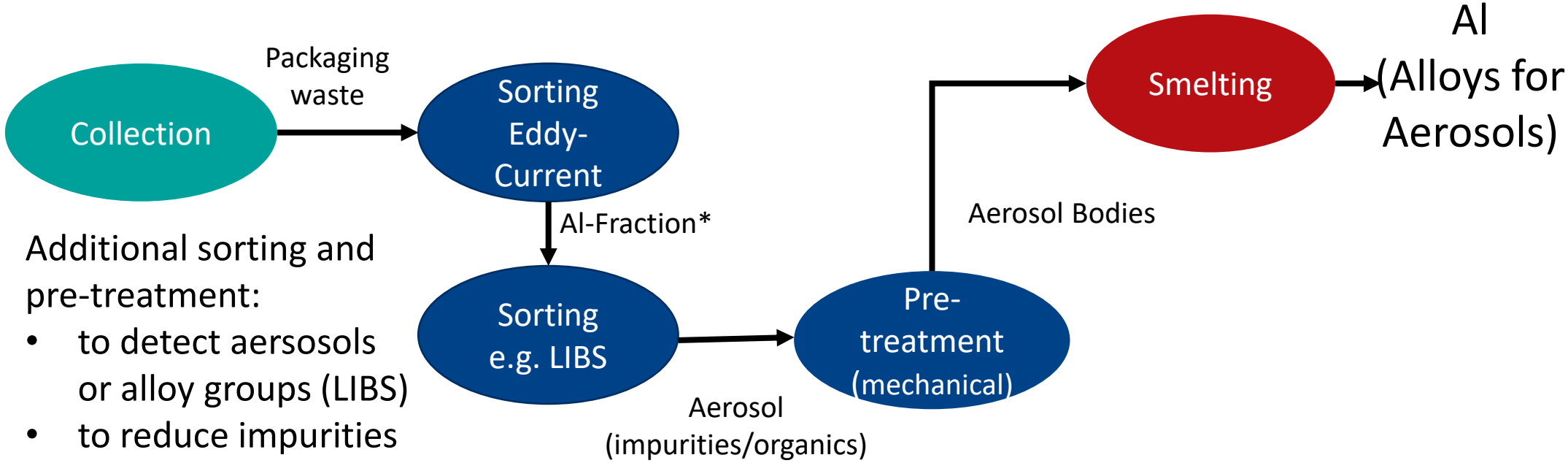
Example: Green dot system



*Aerosols: part of the Al-Fraction

Optimization Potential (OP)

Additional sorting



Additional sorting and pre-treatment:

- to detect aersosols or alloy groups (LIBS)
- to reduce impurities and organics (e.g. XRT, XRF)

Additional processes require energy and logistics

Improvement Potential
Collection

Key Performance indicator:
Collection Rate (CR)

- **Higher CR,** e.g. awareness raising through campaigns (e.g.„the lonely aerosol“, „every can counts“ as for beverage cans)
- **Additional collection points**
  - POS (e.g. supermarket)
  - POU (e.g. hairdresser)
- **New ideas**
  - Use also existing systems as partner (glass collection)
  - Use post/mail
  - Establish deposit systems

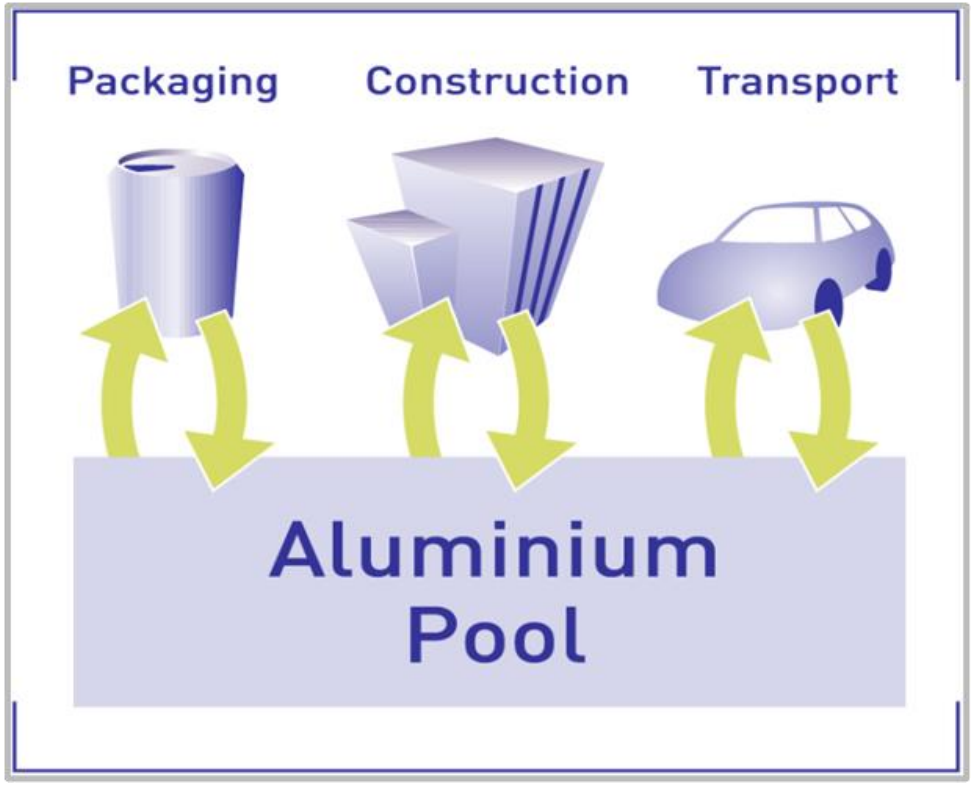
Improvement potential
Sorting

Performance indicator:
Sorting efficiency (SE)

- Improvement of efficiency of existing sorting equipment
- Development of new technologies
- Introduction of additional sorting technologies to reduce impurities and organics (XRT, XRF)
- Additional sorting technologies to detect aerosols/aerosol alloys (LIBS, HSI)

Evaluation - Optimization

What are the benefits for the aluminium market?



- Regulation/Steering of scrap flows needs to be assessed with respect to environmental and economic side-effects in the aluminium pool (e.g. logistical efforts)

Summary
Food for thought

- Aluminium recycling is profitable for the environment and it contributes to a sustainable development
- Aluminium recycling requires only 5 percent of the enegry compared to primary aluminium
- The demand for recycling aluminium is higher than the supply
- Only about 36 percent of the world‘s aluminium demand can be covered by recycling aluminiun (pre- and post-consumer scrap).

Claims on recycling content and low carbon aluminium need to be transparent

- Only collected aluminium can be recycled
- Further development of existing collection systems and process technologies for sorting, pre-treatment and remelting contribute to an optimization
- There are technologies available to detect impurities and aerosol alloys
- What ever is done: additional sorting needs infrastructure and investments in technologies – controversial environmental and economic effects need to be balanced and evaluated

Increase of the collection rate is a paramount goal

Thanks for your attention!

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