Waste Collection and Treatment in Austria
Secrets of Effectiveness

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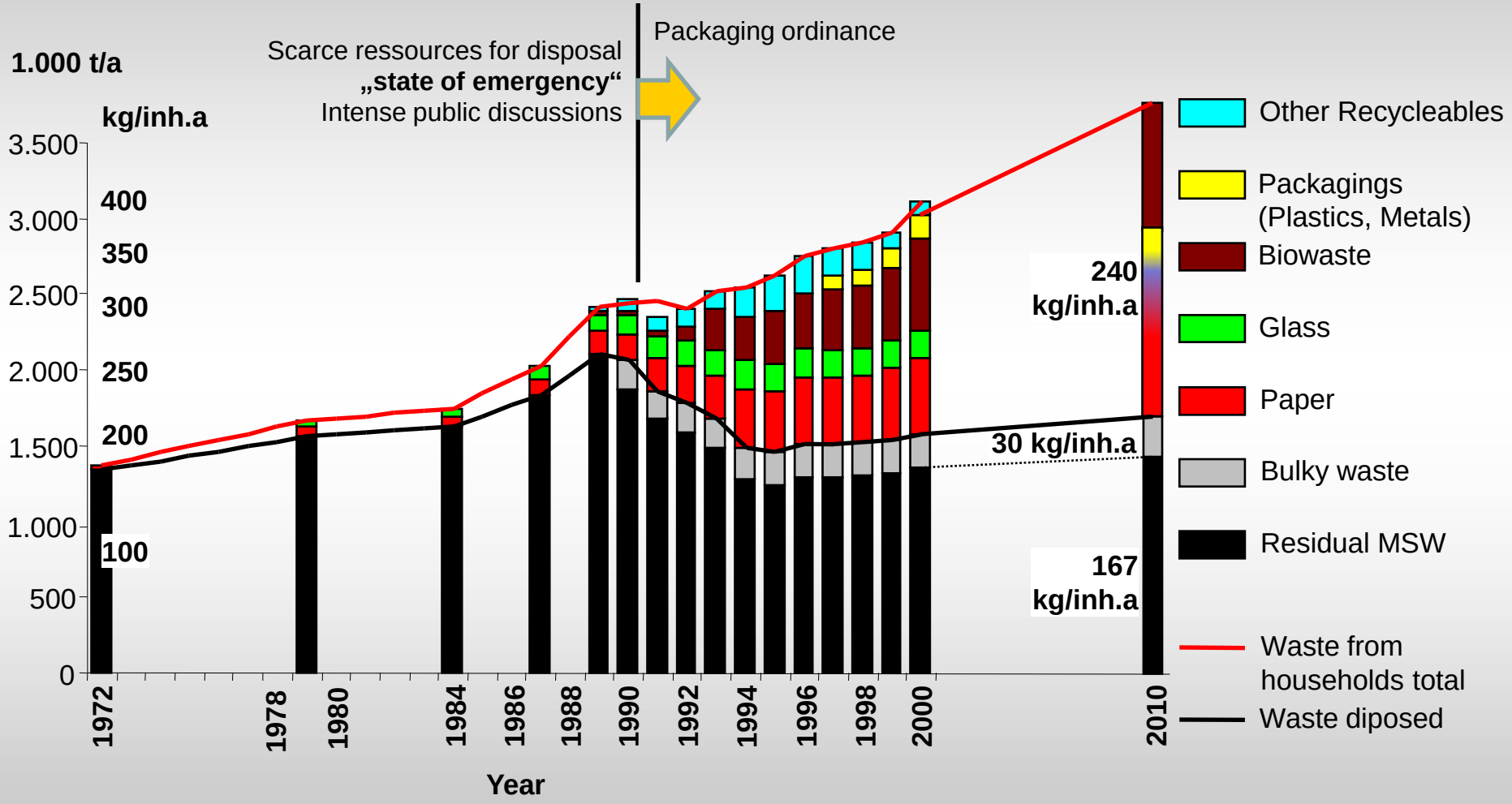
Questions asked

1. What is the waste management and recycling system in Austria and how it was created?
2. What are the current pros and cons of the system (we need a systemic description, with mass balances, recycling rates etc.)
3. Cost issues
4. How the system fits to the demographic, economic, spatial and social conditions
5. Key-lessons learnt from the development of your system that could be useful for Greek municipalities too

Secrets of Effectiveness
In Very Short Words

- Scarce Ressources for Disposal („state of emergency)
  - Late 80´s beginning 90´s
  - Exorbitant prices for disposal (EUR/t 220 in 1990)
- Ban of landfilling untreated Waste combined with landfill Tax up to EUR/t 84,-
- Frequent Measurement of Waste Composition
- Efficient Reporting System

Historical Development of Quantities of MSW in Austria



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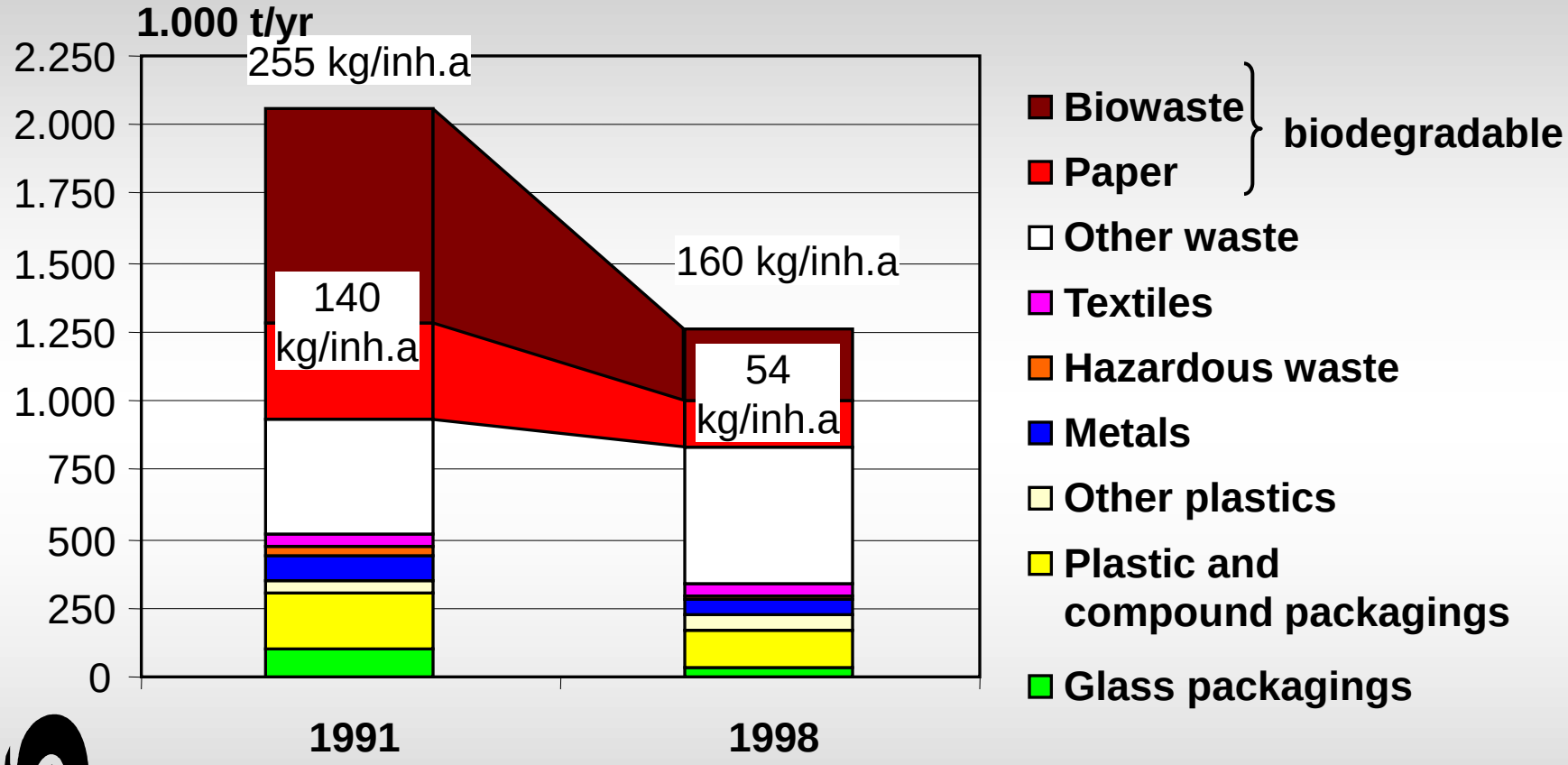
Quantity and composition of residual MSW in Austria, 1991 and 1998

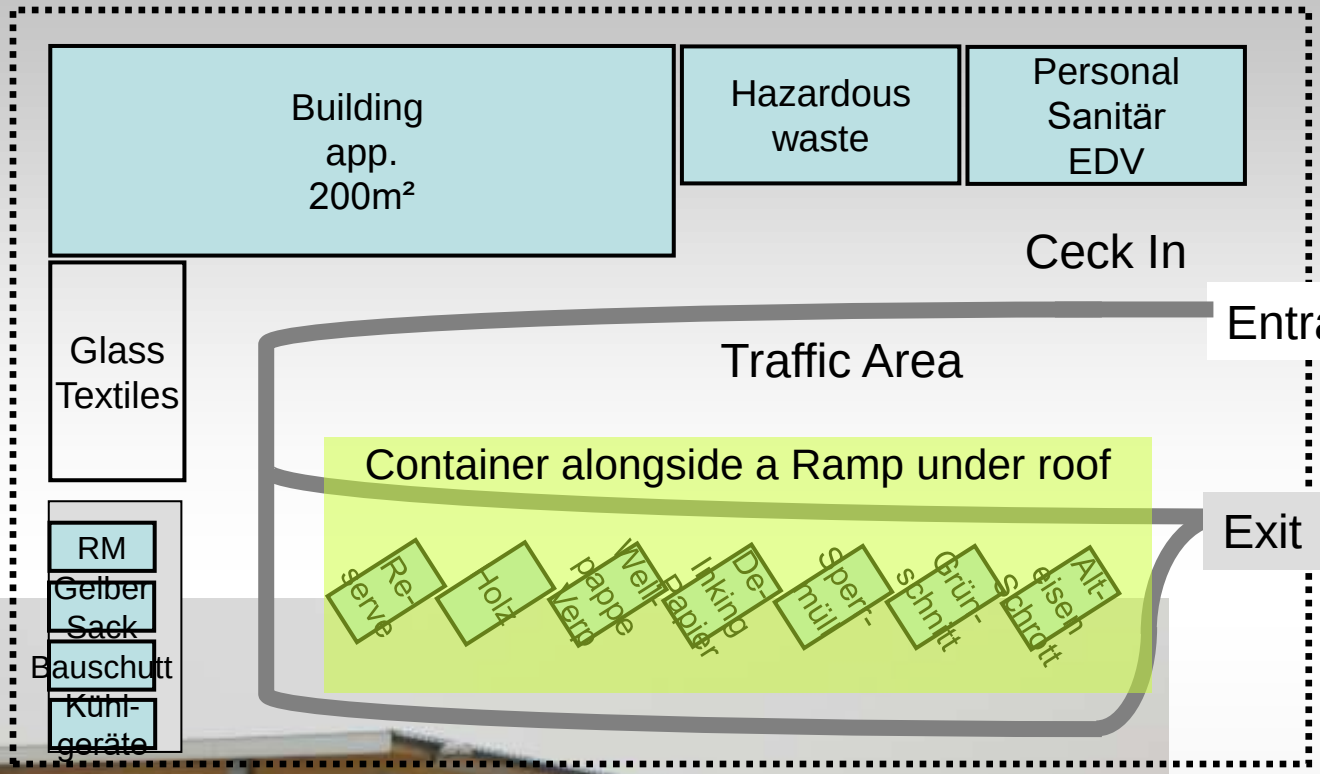


Separate collection of Paper/Cardboard and Biowaste can deliver the highest contribution to the reduction of residual MSW-quantity

Key Driver for Avoiding Landfilling

- Ban for Landfilling Waste with an ignition loss of more than 5%
- Ban for landfilling biological treated waste with a gross calorific value of more than 6.000 kJ/kg
- Accompanied with a Landfilling Tax of EUR/t 84,-

Typical Waste Collection Site



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Typical Collection Infrastructure

Kerbside Collection

Plastic Packaging **Residual MSW** **Biowaste** **Paper**

Decentral Collection Sites

Glass

Metals

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Waste Collection in Towns

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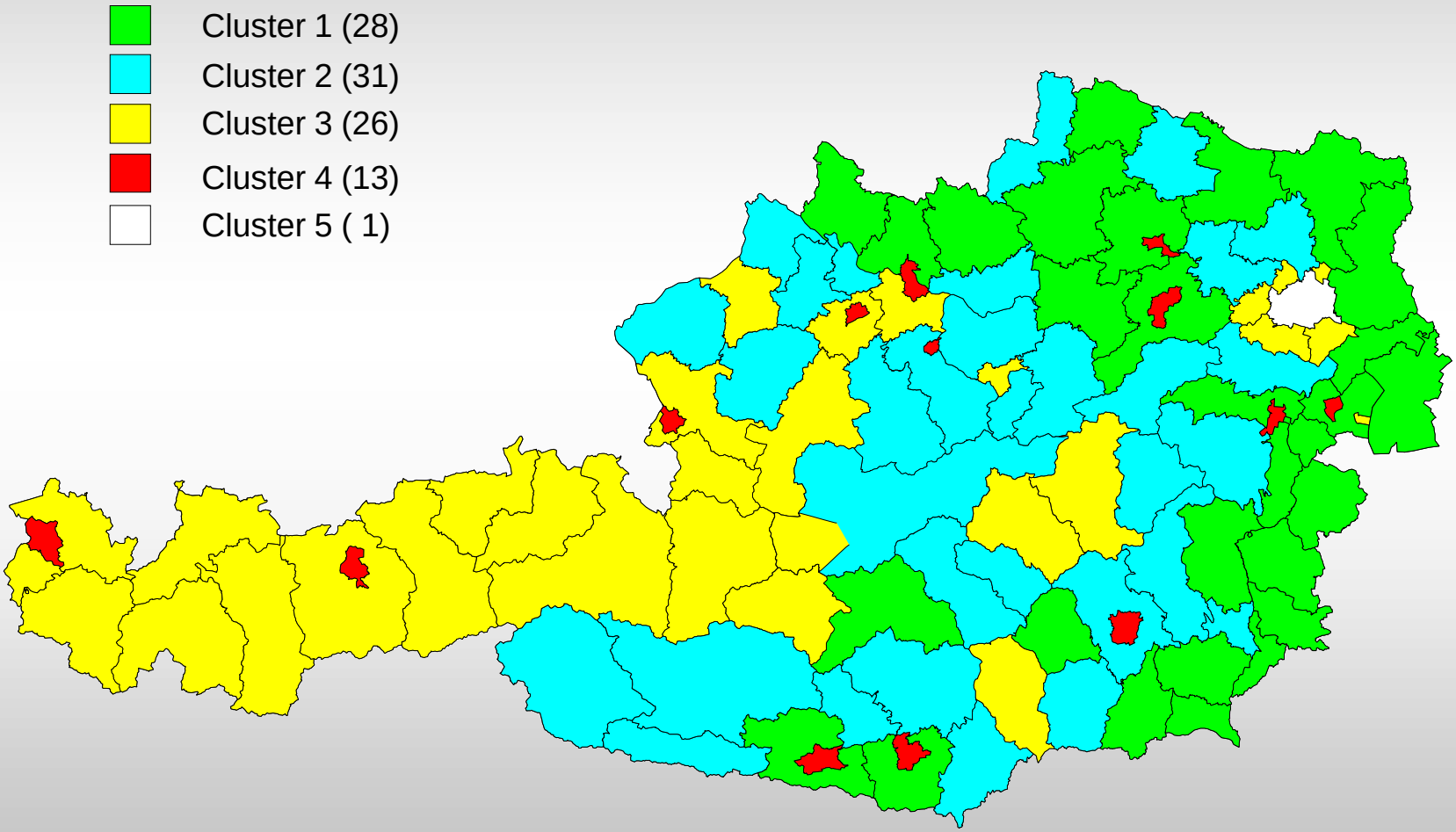
Rates of separate Collection Municipal Waste

	Rates of separate collection, app.
Paper	70%
Glass	82%
Metal Packaging	43%
Plastic Packaging	52%
Compound Beverage Packaging	56%
Other Compound Packagings	24%

Cluster-Analyses of Regions



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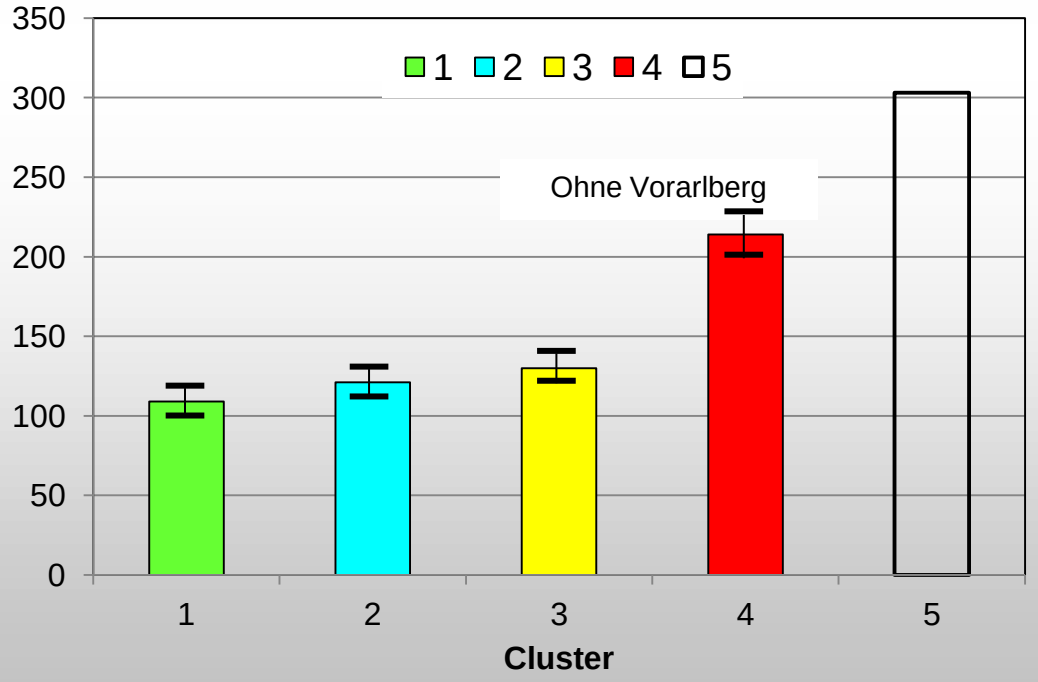
Cluster – relevant for Waste Management?
Quantity of residual MSW

	Cluster				
	1	2	3	4	5
Einwohner	1.550.774	1.964.046	2.002.578	1.188.779	1.724.381
Anzahl Bezirke (99)	28	31	26	13	1
Restabfallmenge [kg/EW.a]	109	121	130	214	303
Vorarlberg			90		



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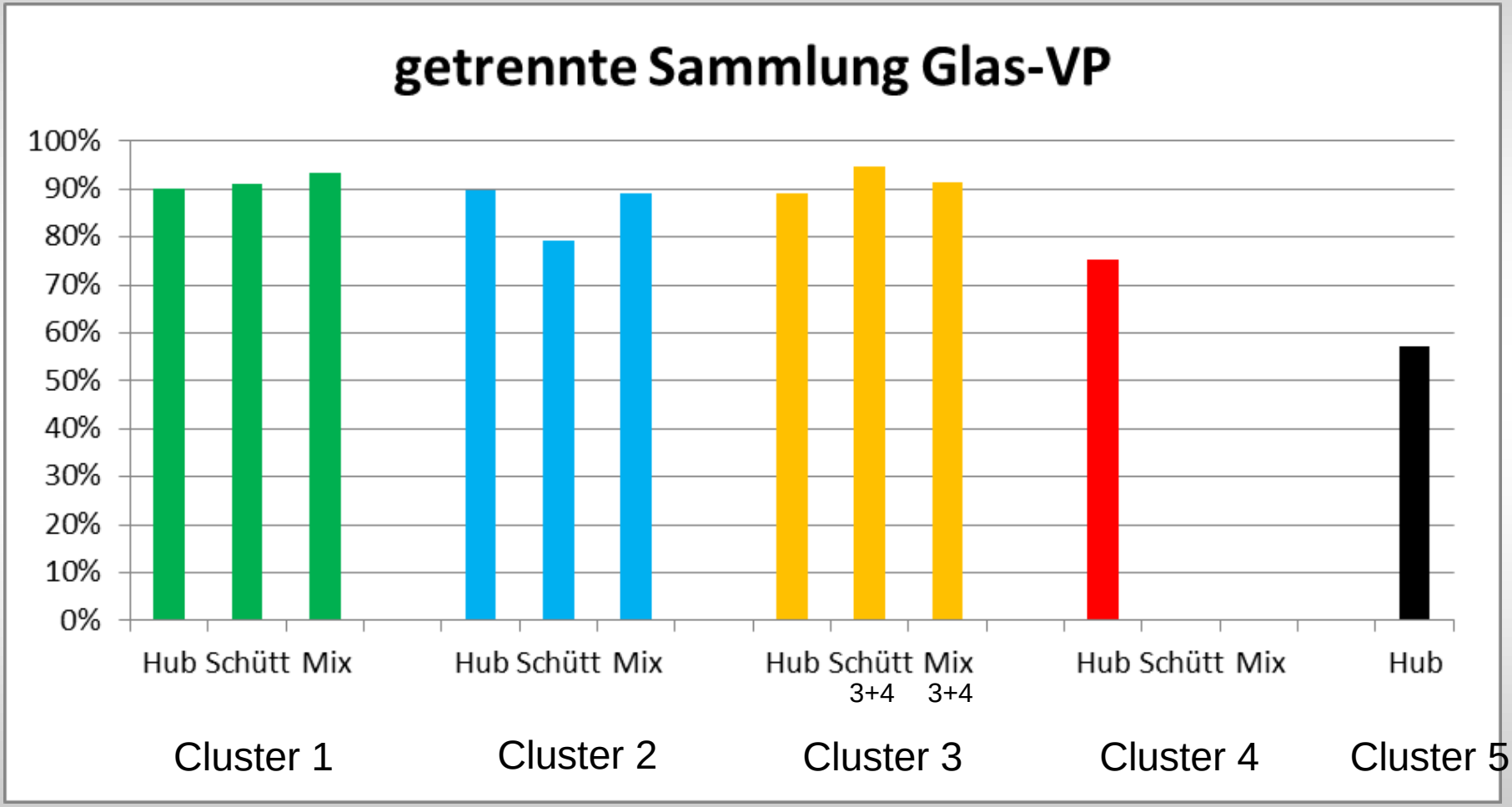
Glass-Packaging Collection Rate by Type of Collection



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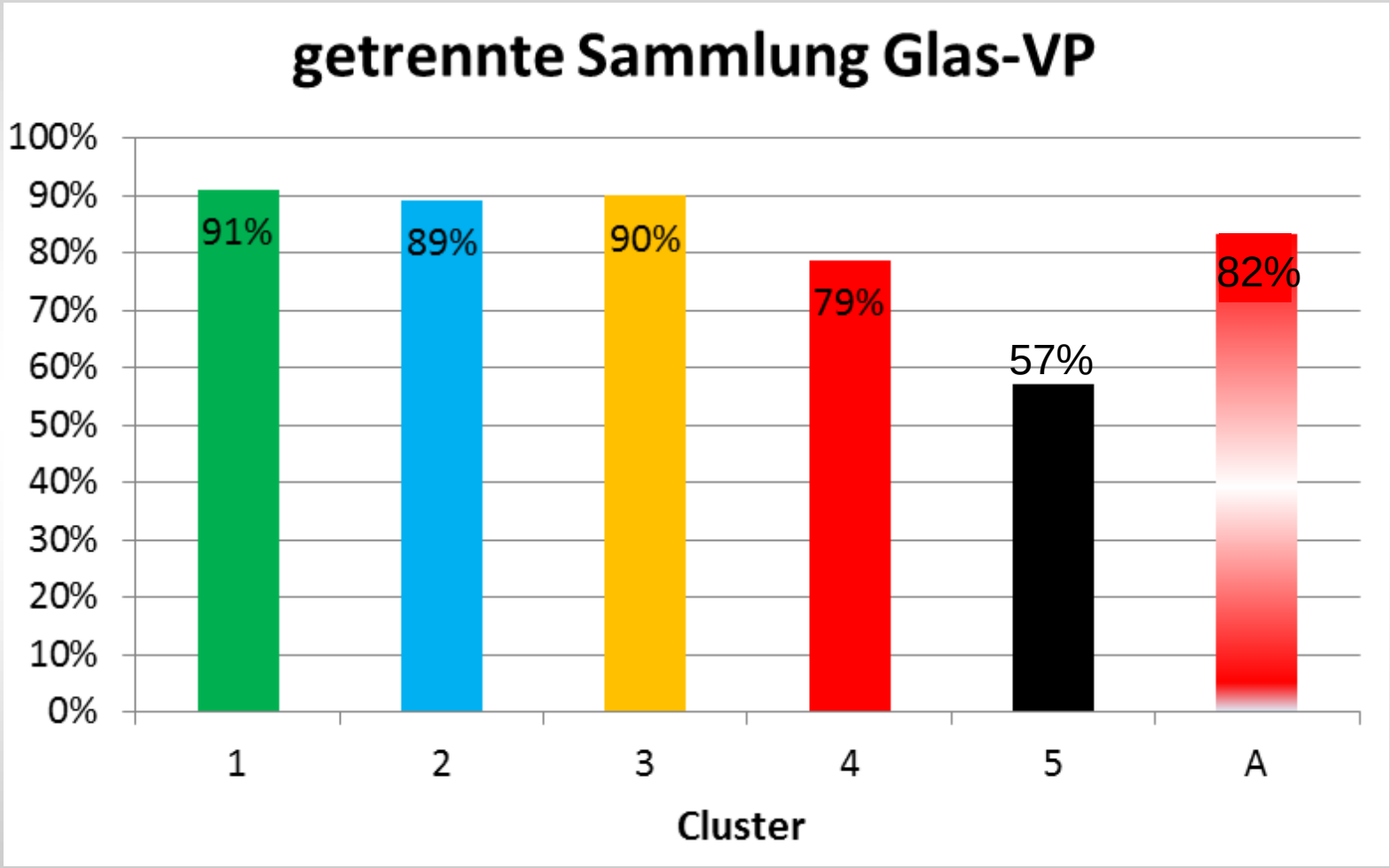
Glass-Packaging
Collection Rate by Cluster



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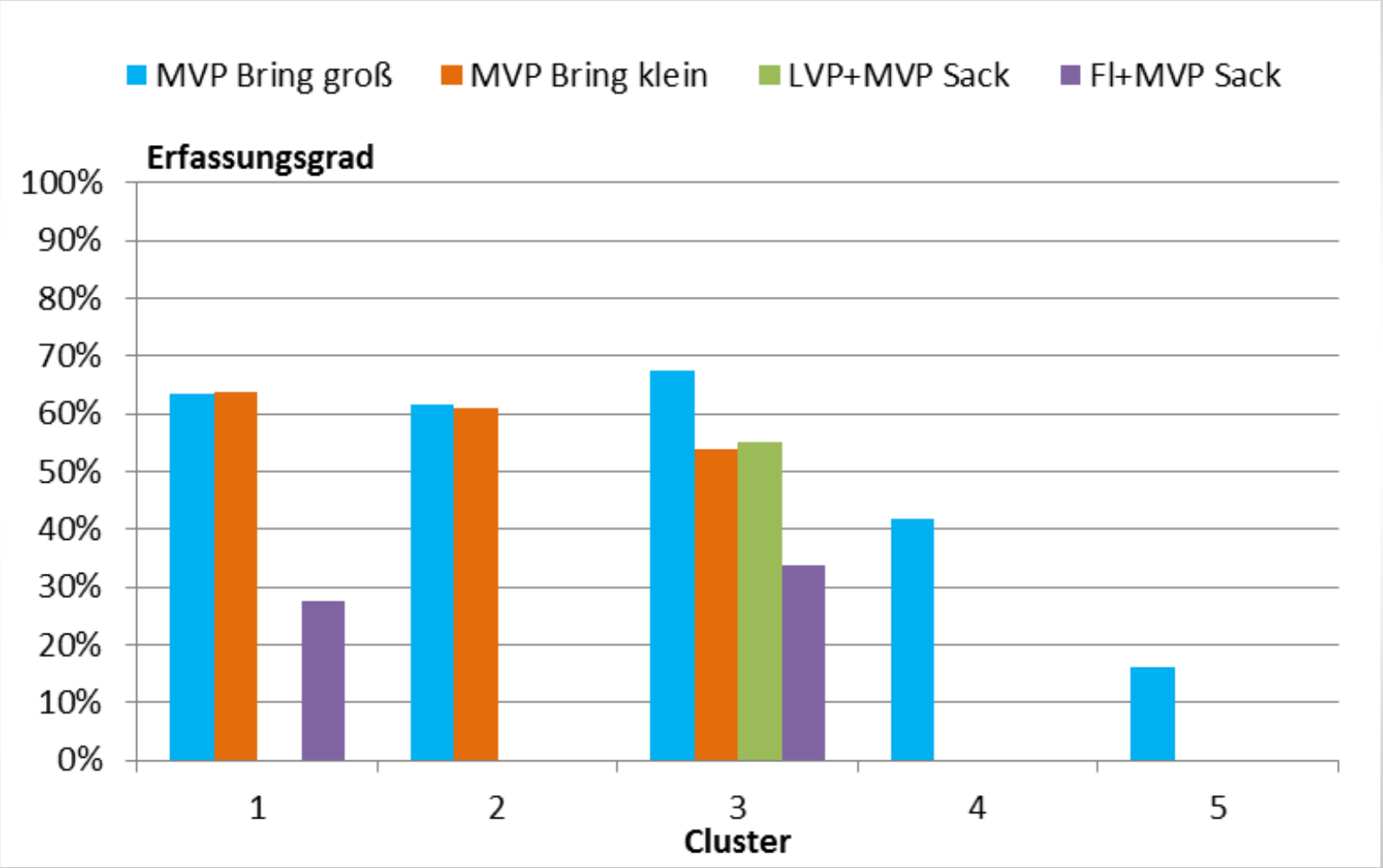
Collection types for Glass-Packaging

Findings Glass-Packaging:

- No signifikant differences in the collection rate between different types of containers – though the density of collection sites is different
- Fewer impurities with closed Containers

Metal-Packaging Collection Rate by Type of Collection



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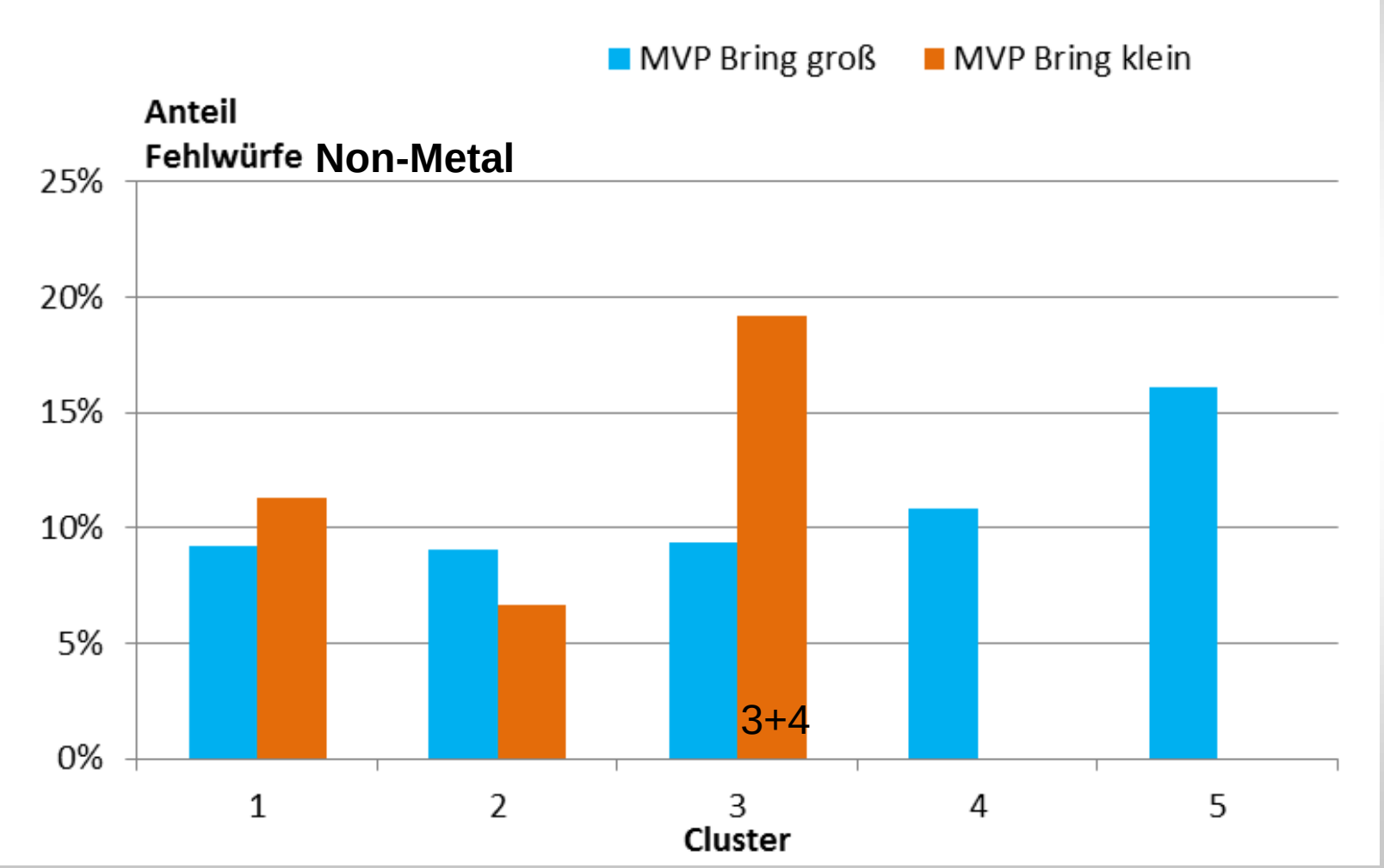
Metal-Packaging
Non-Metals by Type of Collection



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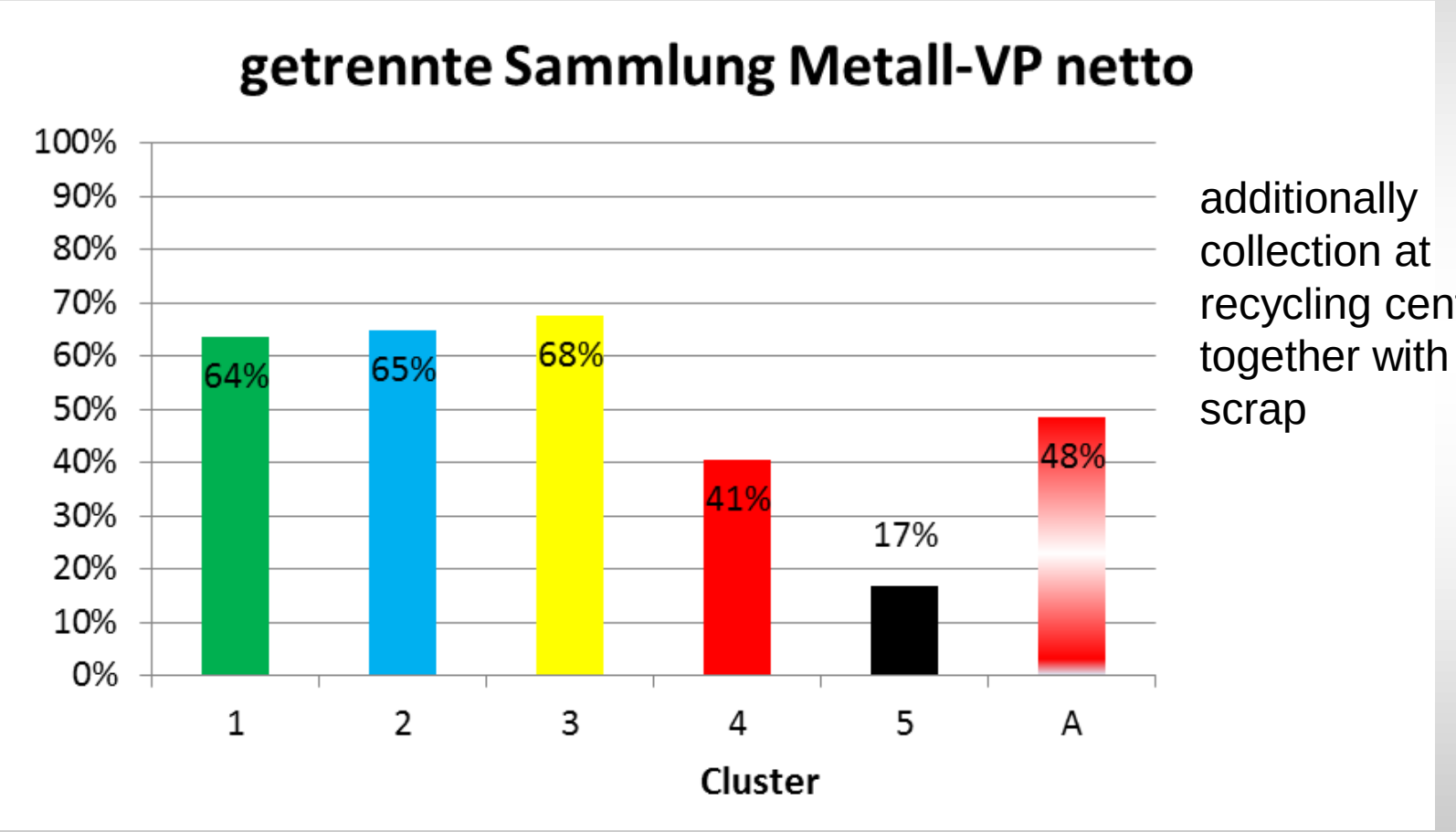
Collection Rate for Metal-Packaging



additionally collection at recycling centers together with scrap

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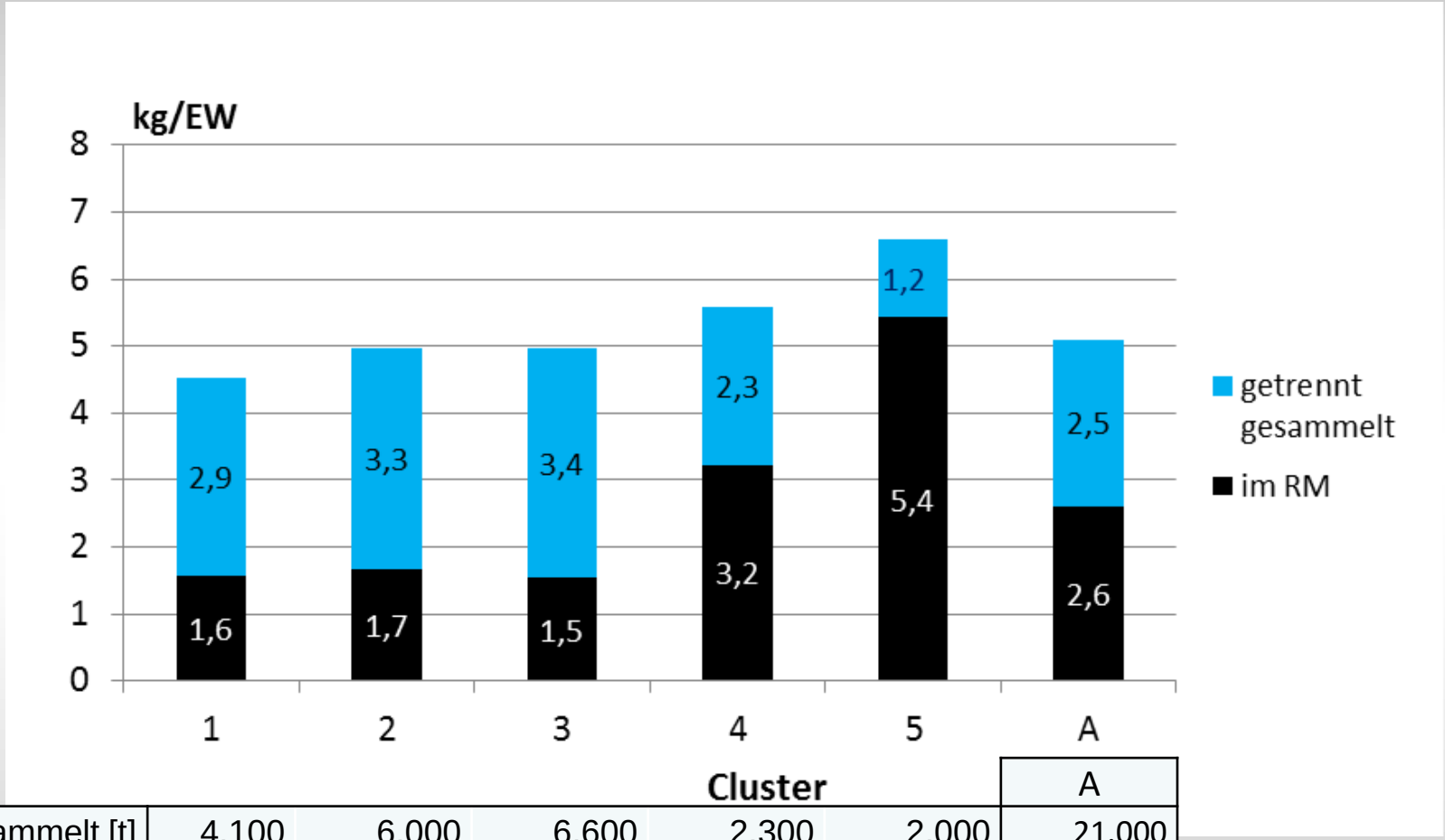
Quantity of Metal-Packaging



	1	2	3	4	5	A
getrennt gesammelt [t]	4.100	6.000	6.600	2.300	2.000	21.000
im Restabfall [t]	2.400	3.300	3.100	3.800	9.400	22.000
Gesamt [t]	6.500	9.300	9.700	6.100	11.400	43.000

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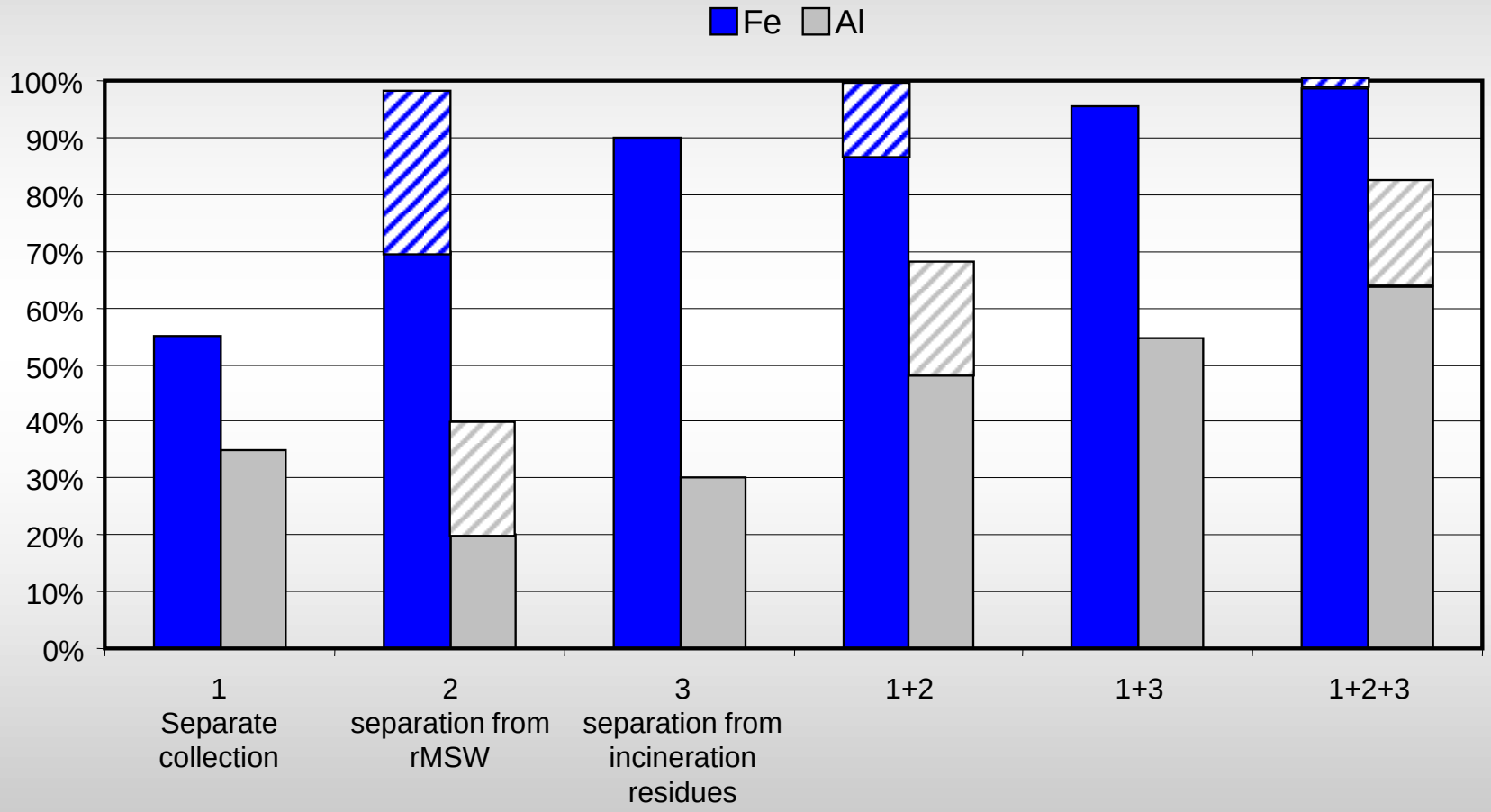
Contribution of different Methods for Metal Separation – Monitored Data



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Collection Types for Metal-Packaging

Findings Metall-Packaging:

- No significant dependance between denistiy of collection sites and rate of collection
- Significant fewer recycling rate of metals when collected together with plastics
- Efficient separation from residual MSW completes the separate collection

Collection Types for Plastic Packaging

At each property

At collection sites

Recycling Center

Collection Rate Plastic Packaging

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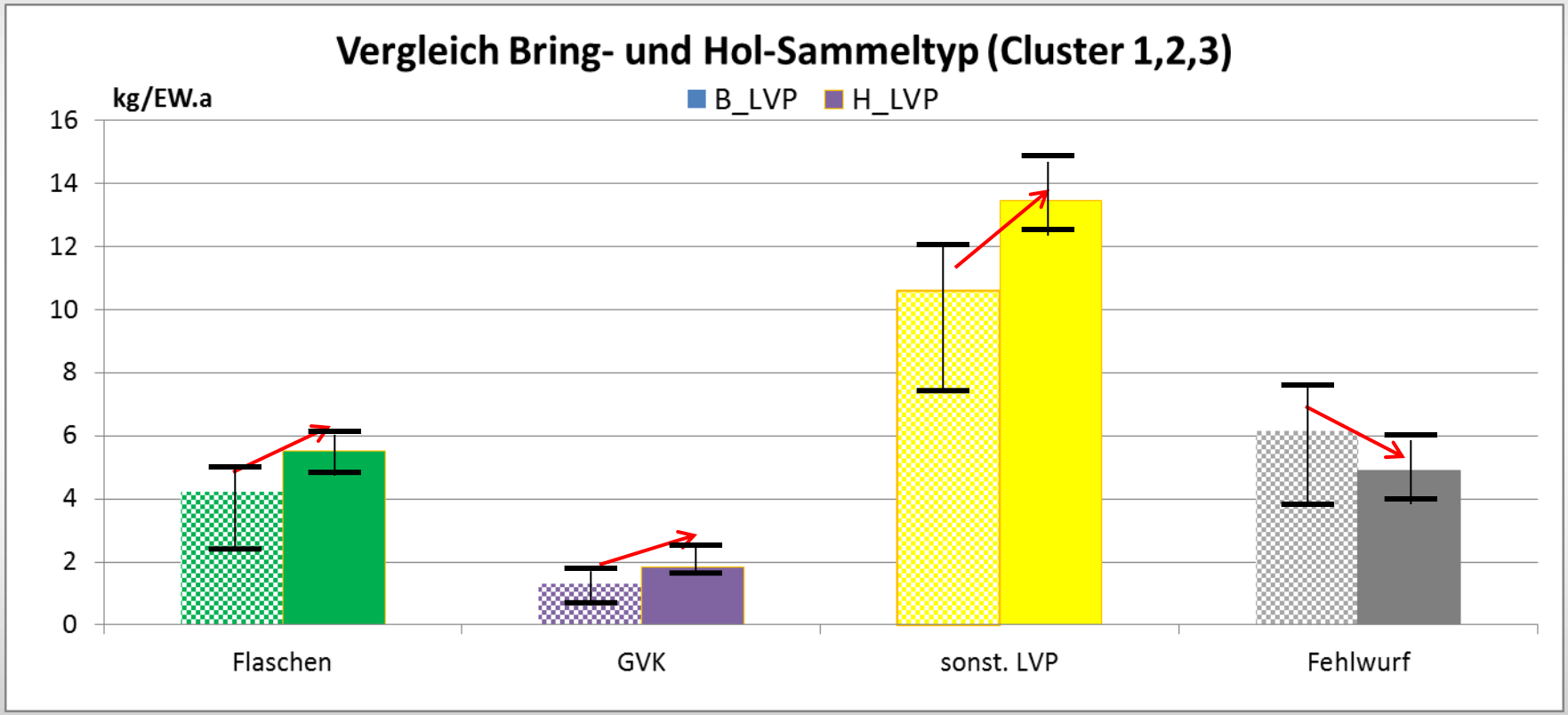
Comparison of Collection-point-system and Kerb-side-collection



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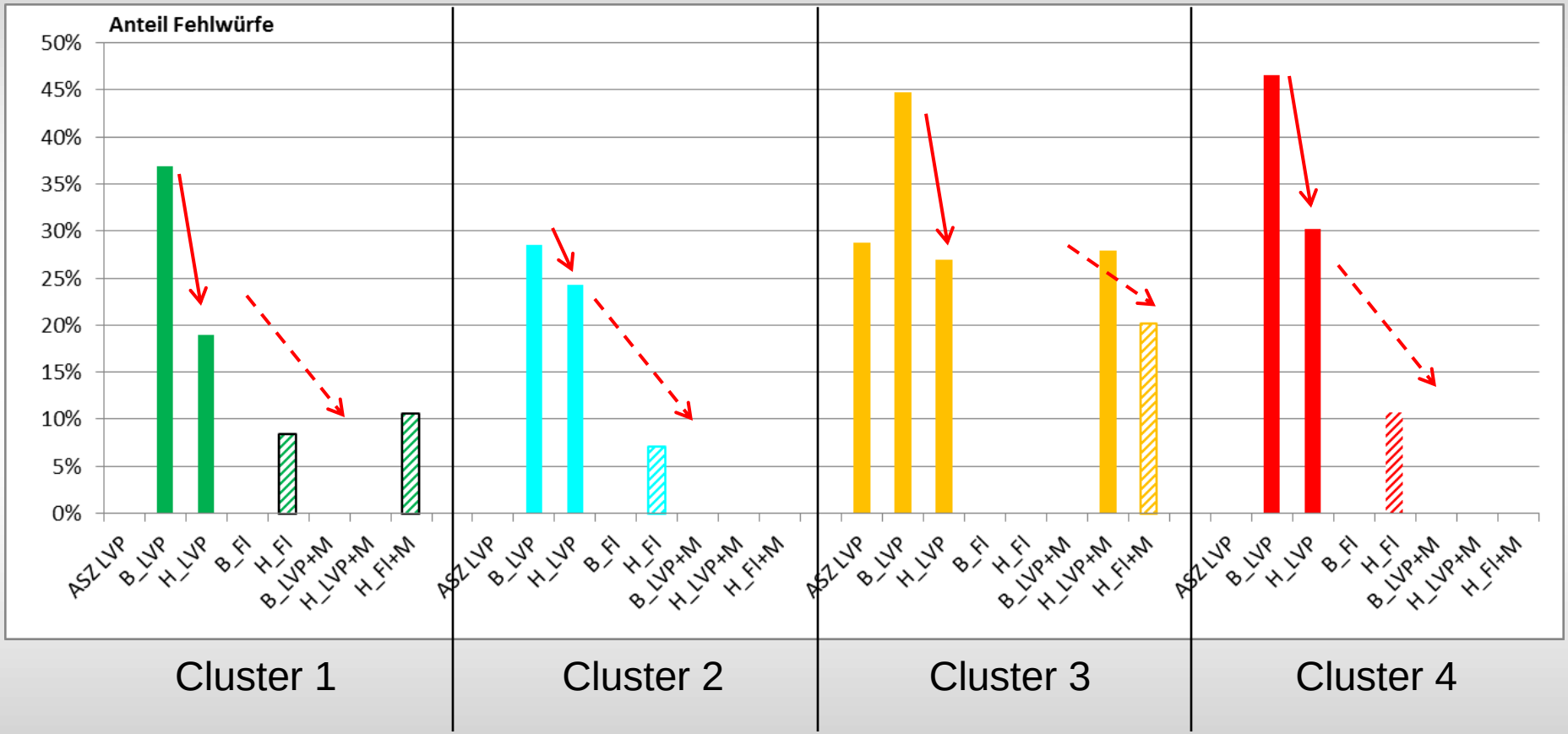
Share of Impurities in the Material collected



Less Impurities at Kerb-side-Collection

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Impurities

Findings Plastic Packaging:

- Higher Collection Rate with Kerb-side-collection than with Collection-point-system
- Less impurities with Kerb-side-collection than with Collection-point-system

Conclusions – Key Lessons learned

- The more rural an area the more advantageous is a kerb-side-collection for paper, plastic packaging, biowaste
  - higher collection rate
  - less costs
- Information of Residents is a must - regularly
  - **Motivation** - Why to collect separately and to improve recycling - regional employment
    - strenghten national economy
    - reducing import of primary raw material – becoming more independent from volatil raw material market
    - saving the environment – locally and global
  - **Qualification** - How to collect seperately
    - which products
    - no impurities
  - **Feedback**
    - Opening treatment facilities to the public
    - Publication of results – successes and what could be done better
- Implementig separate collection and recycling with a reduction of resdiual MSW was a key factor for the acceptance of treatment facilities