

Open- und closed-loop Strategien für das mechanische Recycling der österreichischen PET-Restfraktion



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Thanks to: Nikolai KUHN (MUL), Gerhard BRAEUER (viscotec), Mathias KULICH (ARApplus), Joerg FISCHER (JKU)



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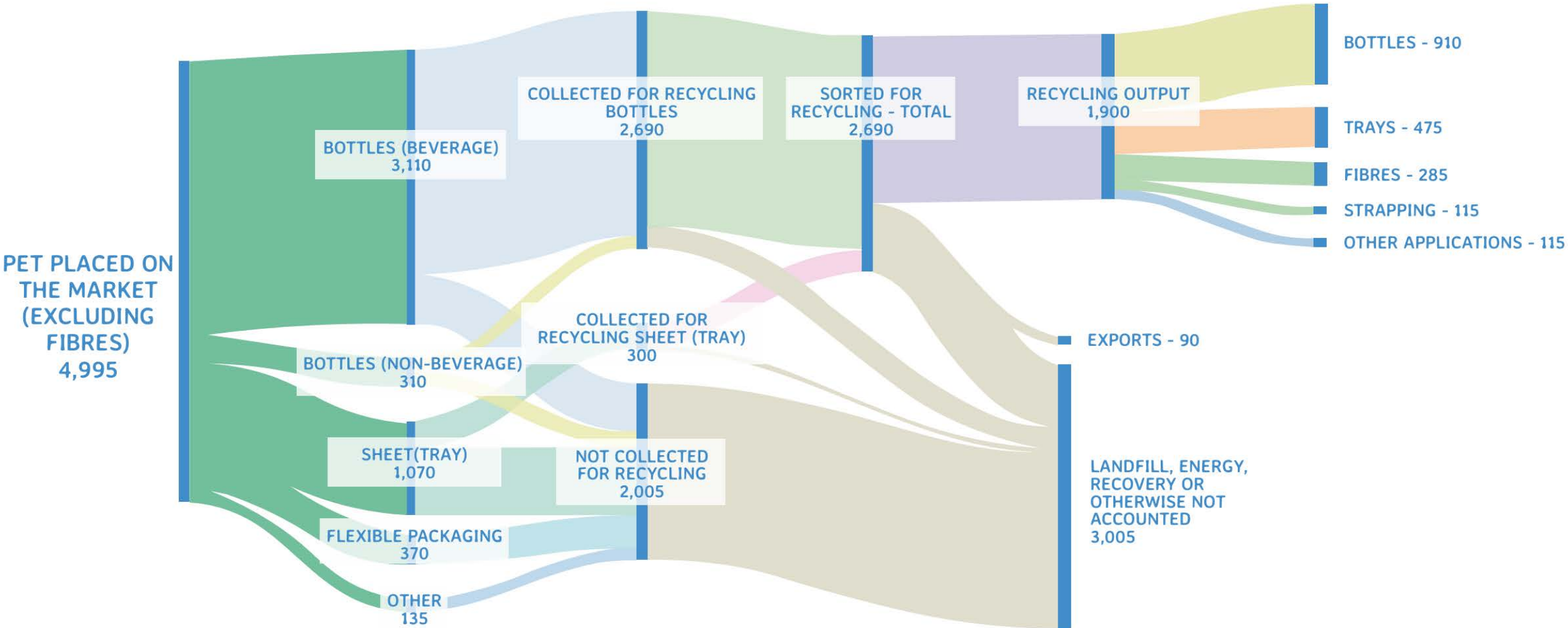


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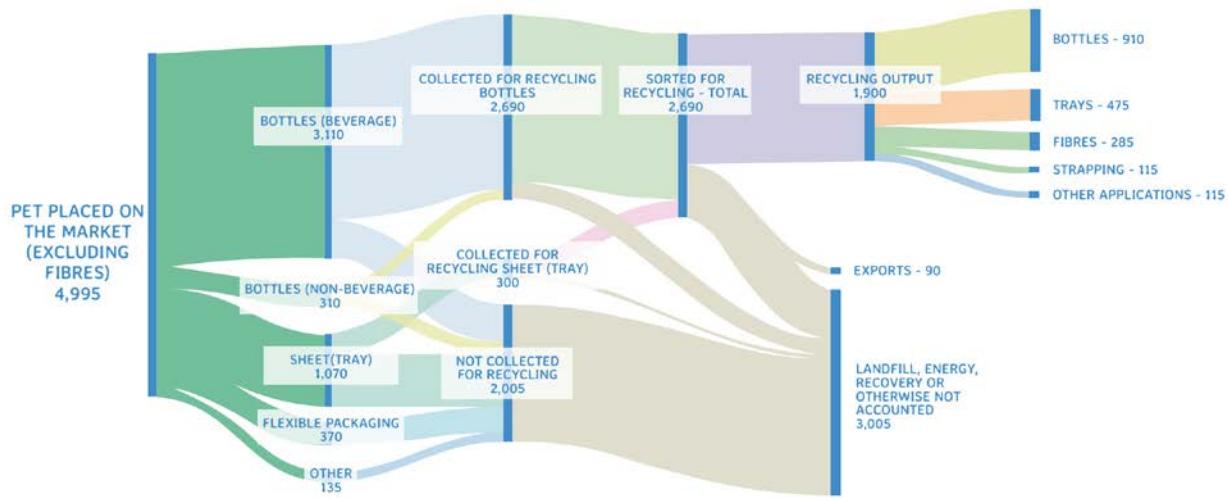
European PET and rPET Flow in 2022

in 1000 tonnes



European PET and rPET Flow in 2022

in 1000 tonnes



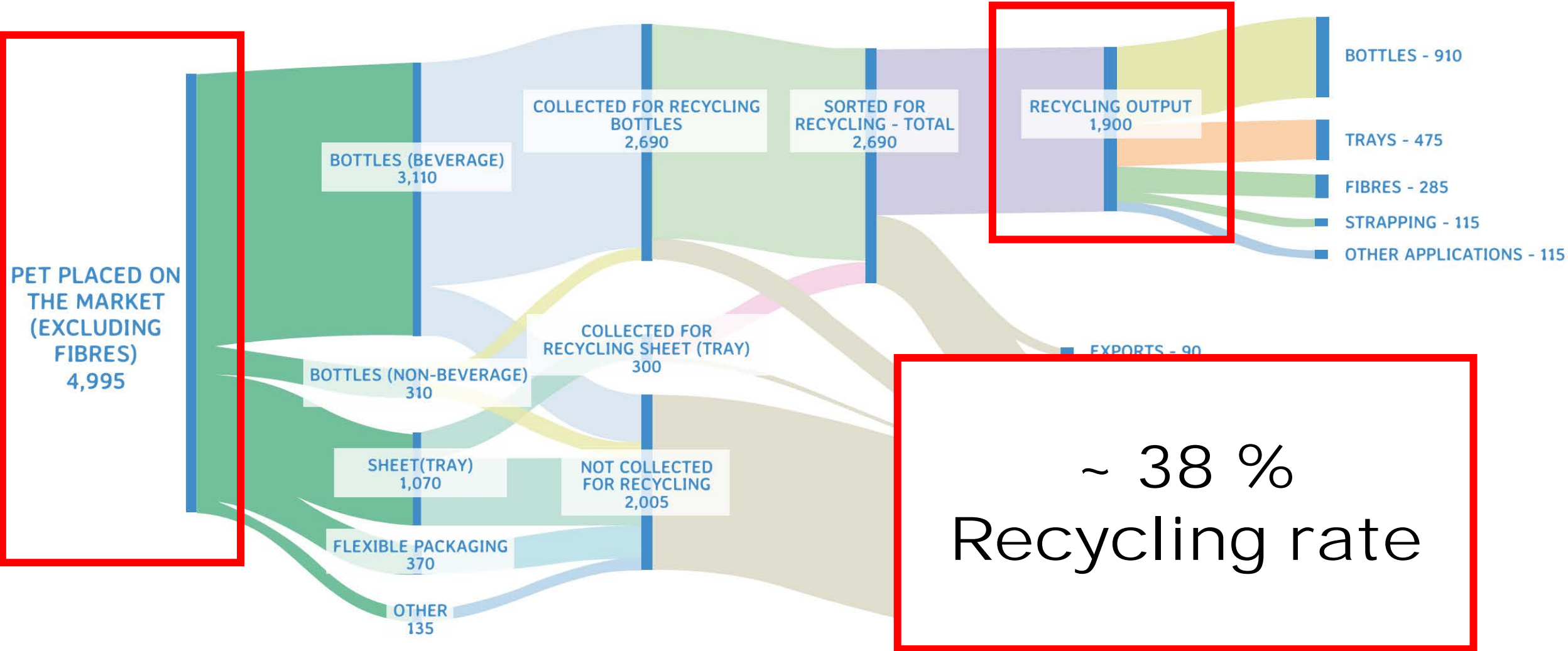
Proposed mandatory recycle content in plastic packaging

Revision of EU Directive 94/62/EC

	PET beverage bottles	PET food contact	non-PET food contact	non-food packaging
2030	30 %	30 %	10 %	35 %
2040	65 %	50 %	50 %	65 %

European PET and rPET Flow in 2022

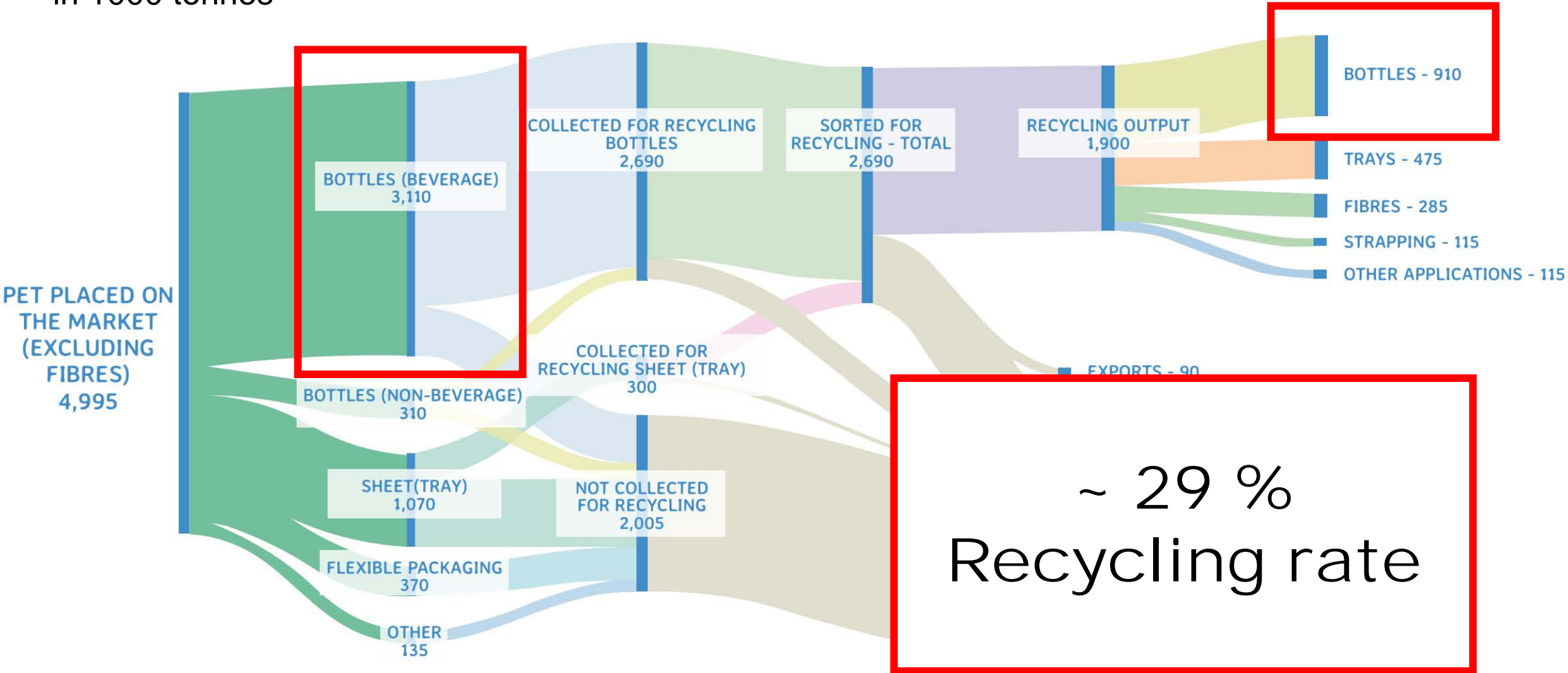
in 1000 tonnes



~ 38 %
Recycling rate

European PET and rPET Flow in 2022

in 1000 tonnes



~ 29 %
Recycling rate

Introduction of Deposit System | What's excluded?

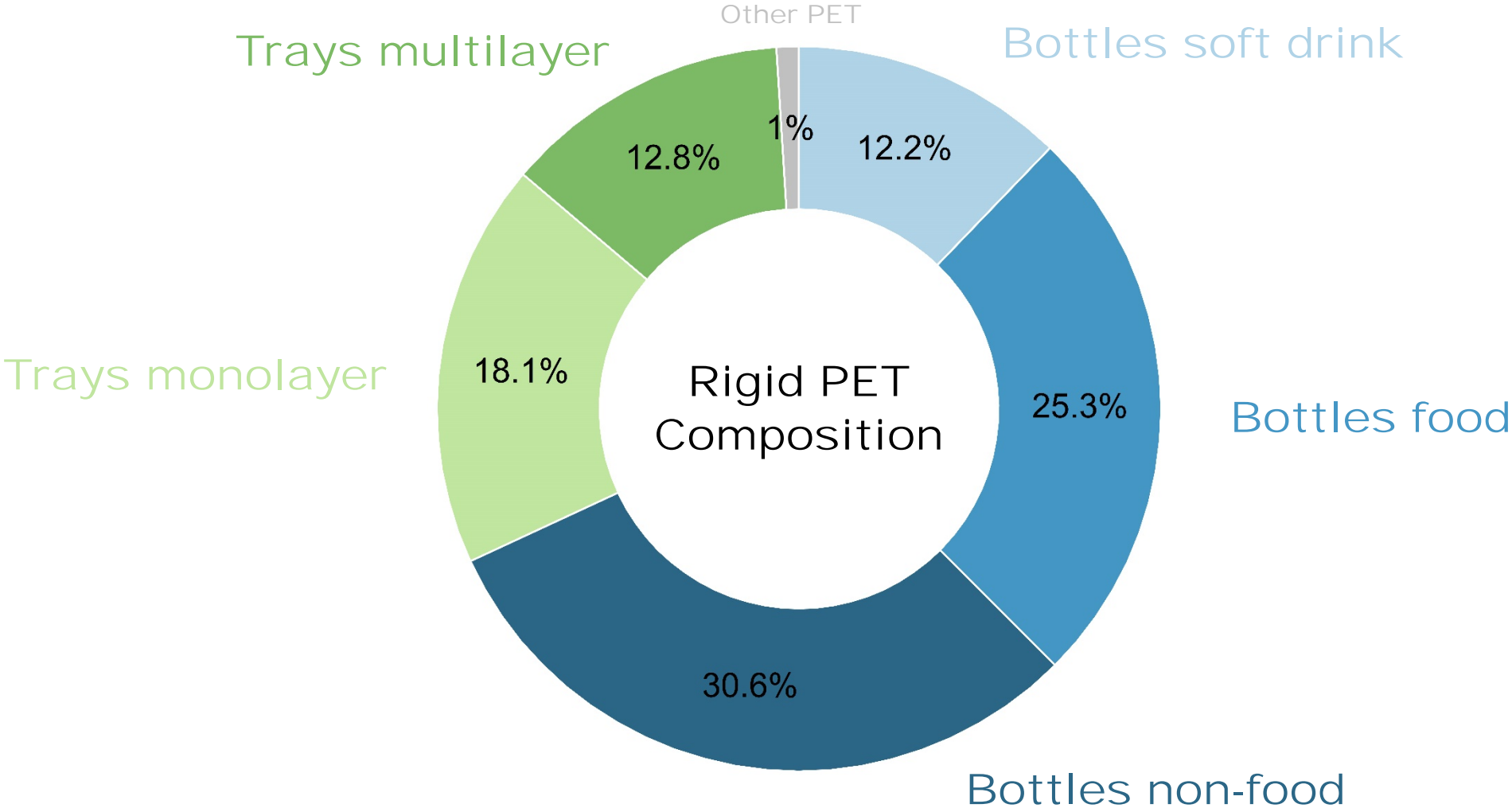
“The deposit covers all closed or predominantly closed one-way beverage containers made of plastic or metal with a filling volume of 0.1 to 3 liters.”

The following PET products are excluded

- Milk and dairy products
- Syrups
- Oil
- Vinegar
- Sauces
- Non-food bottles



PET 499 Composition | Results from PET2PACK



PET 499 Bottles | iV Increase & Decontamination

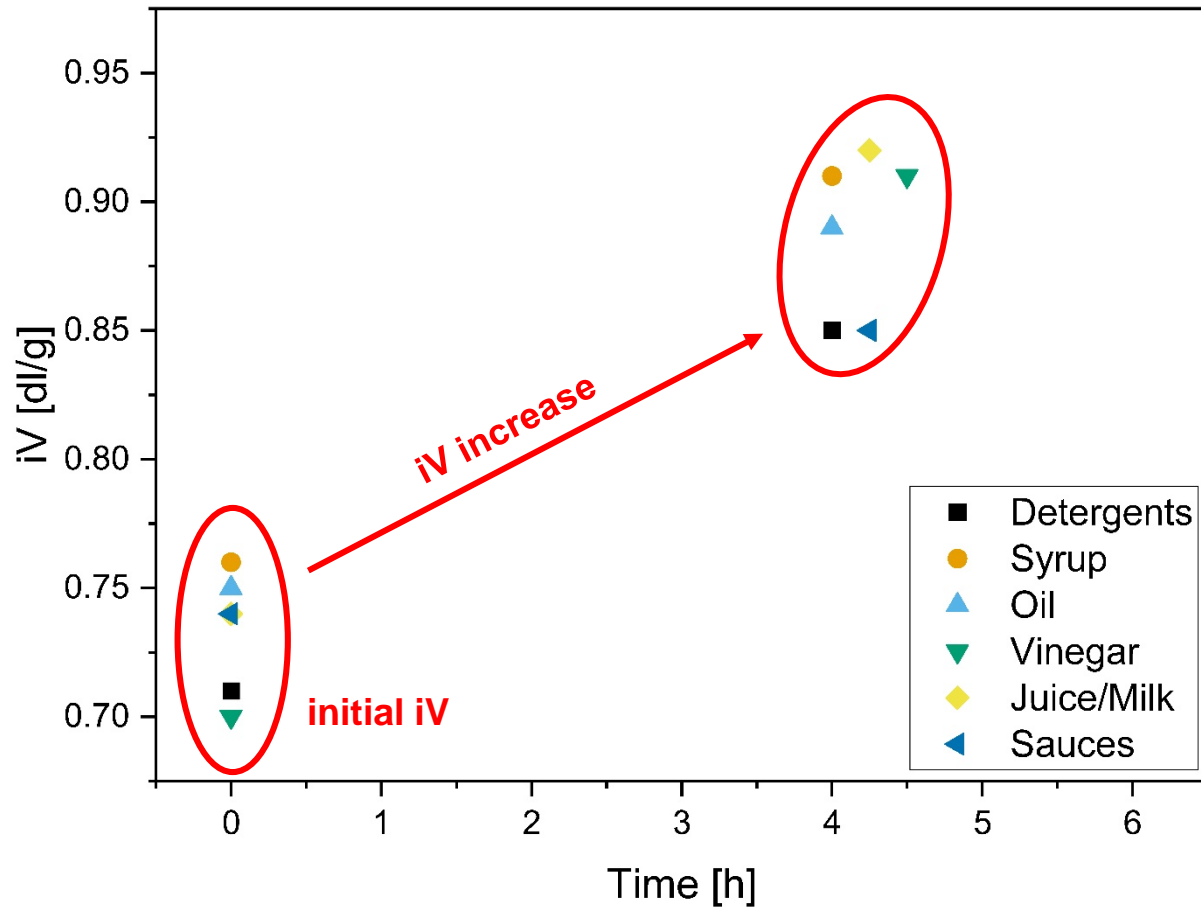
Pre-Trials



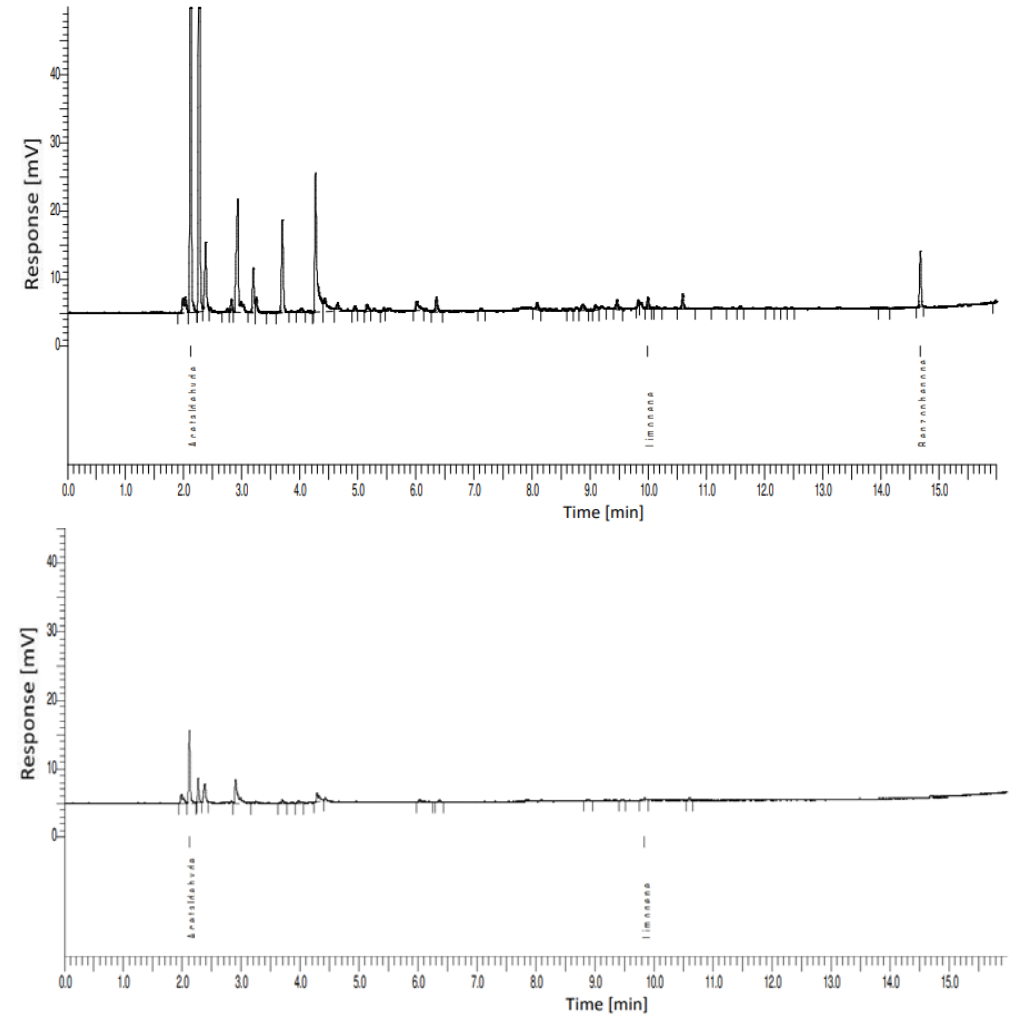
PET 499 Bottles | iV Increase & Decontamination

Pre-Trials

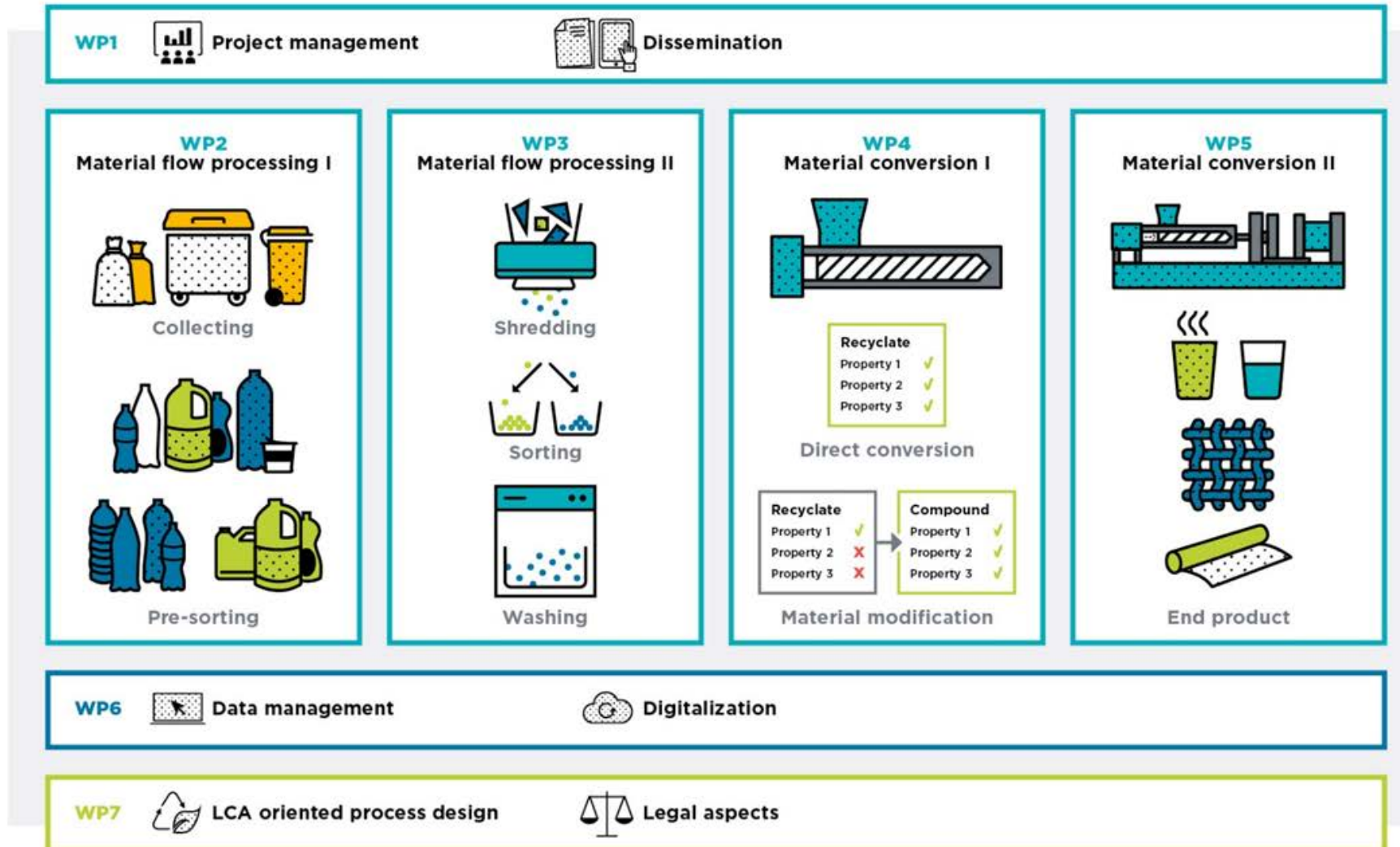
iV simulation at 200°C



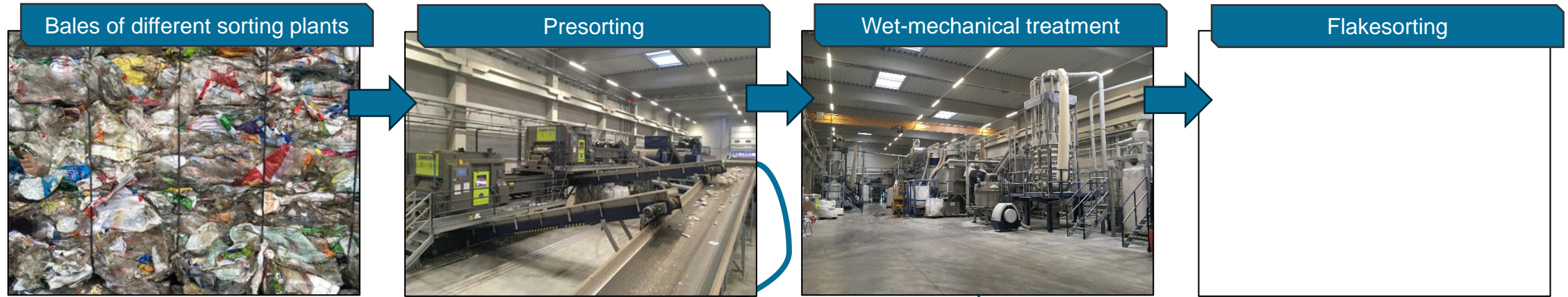
Decontamination in SSP simulation



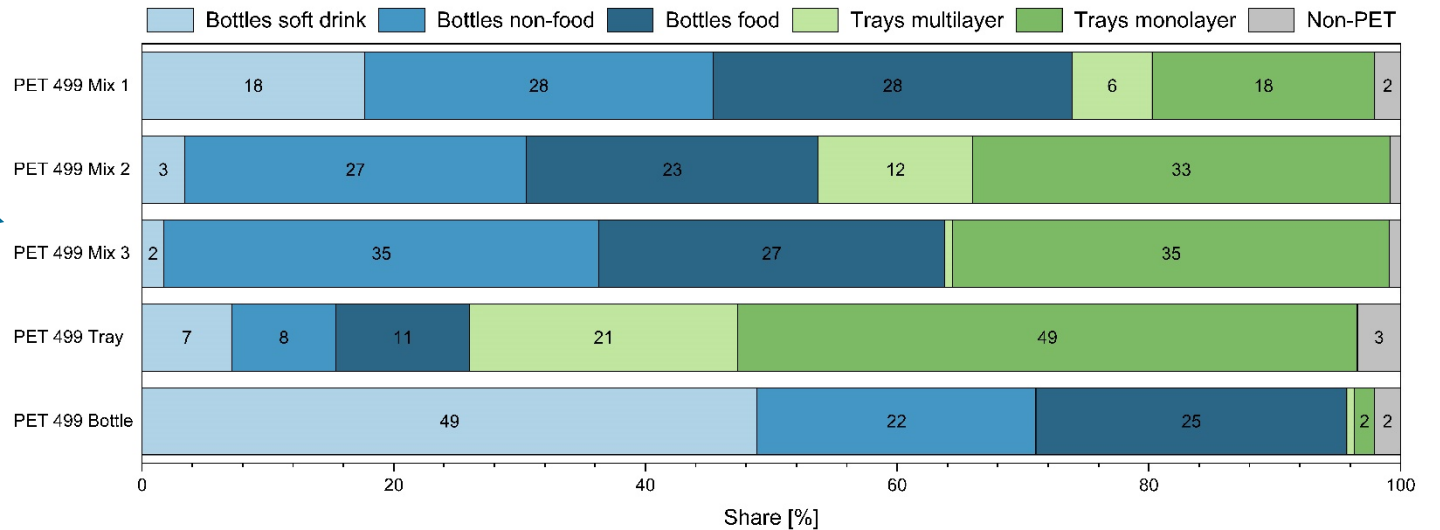
Industrial Trial within circPLAST-mr



Industrial Trial PET499 | Sorting & Washing PET Recycler

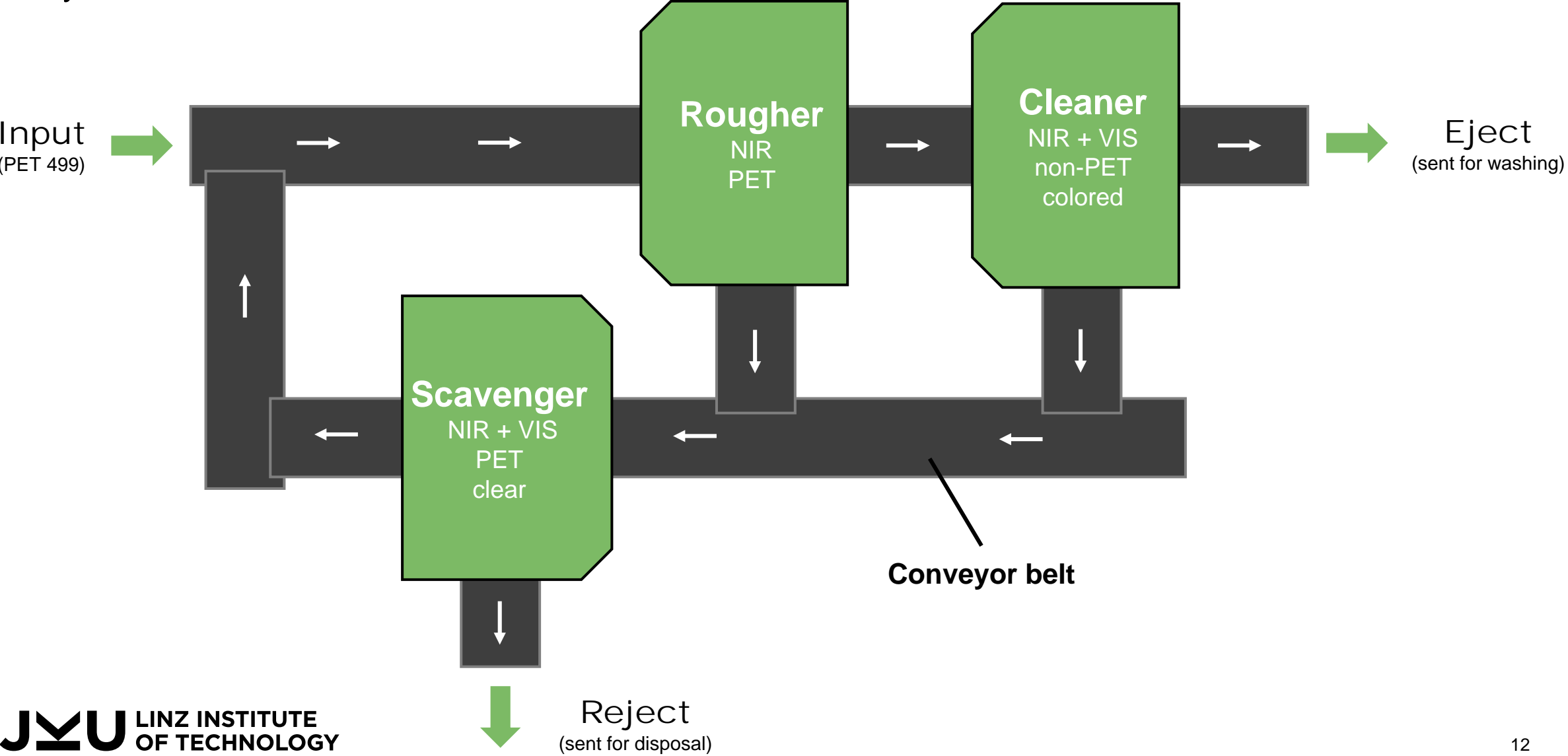


Composition analysis by handsorting



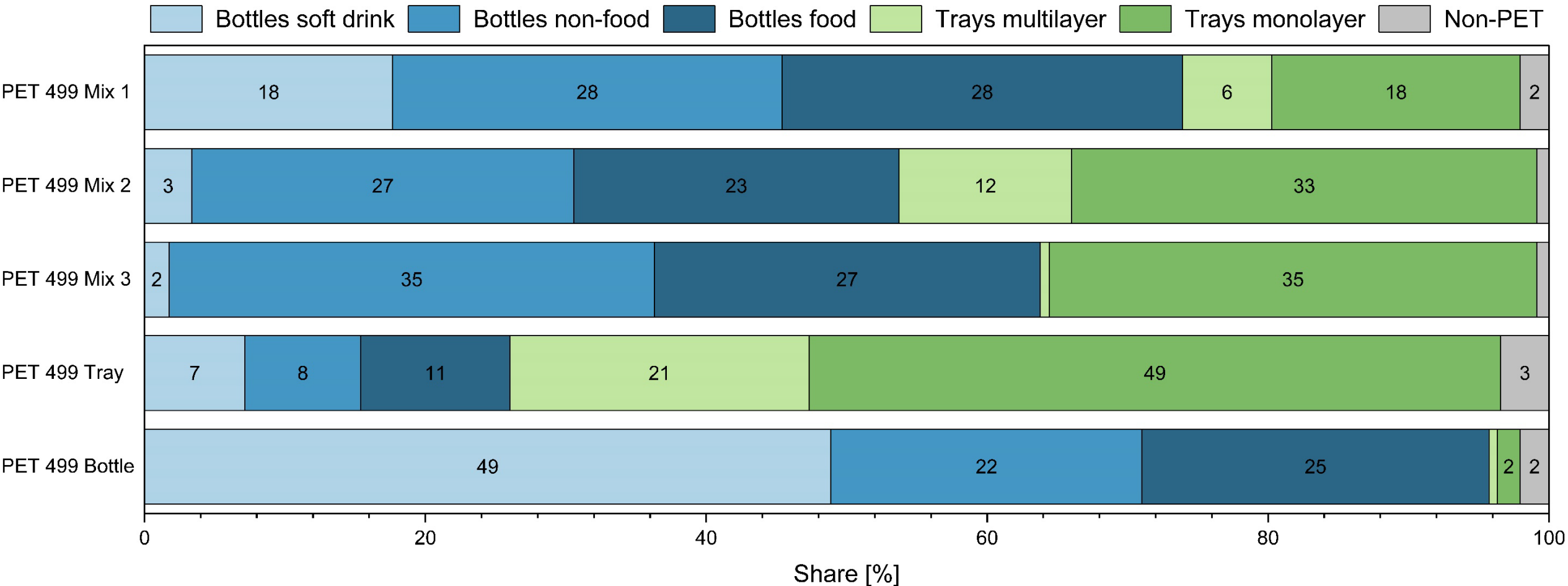
Pre-Sorting on Object Level | Sorter Setup

Recycler



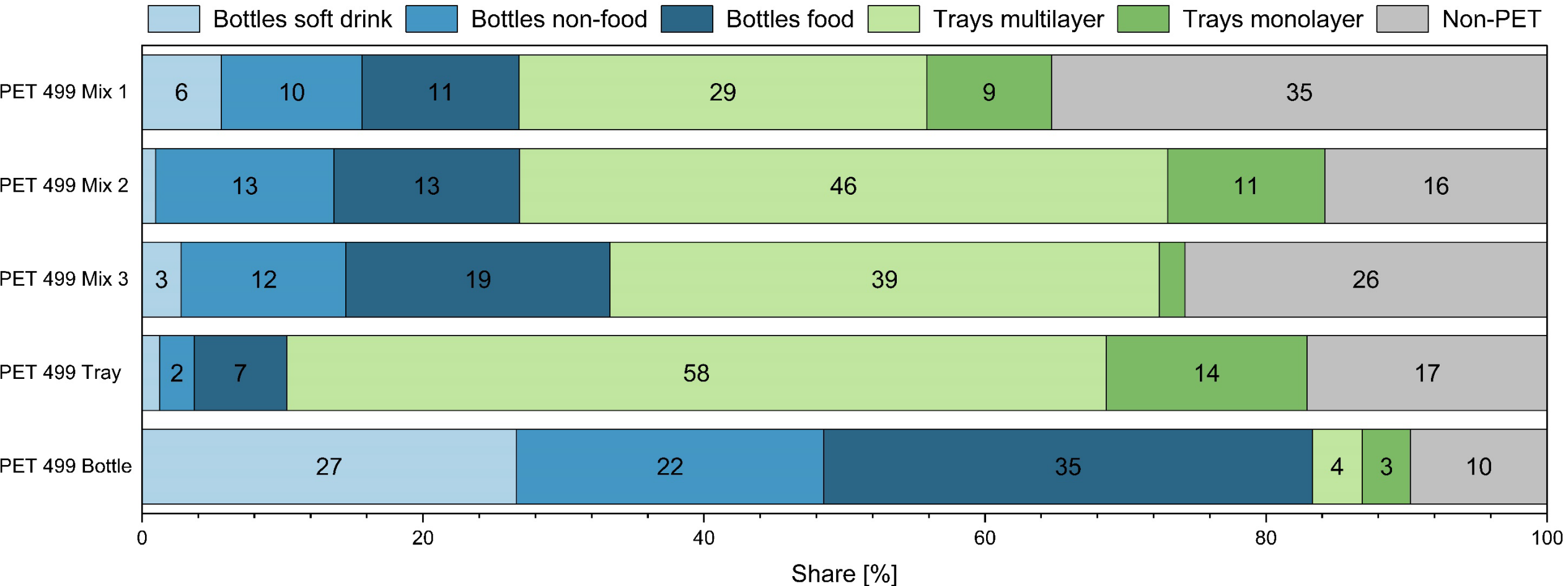
Industrial Trial PET 499 | Eject Composition

PET Recycler

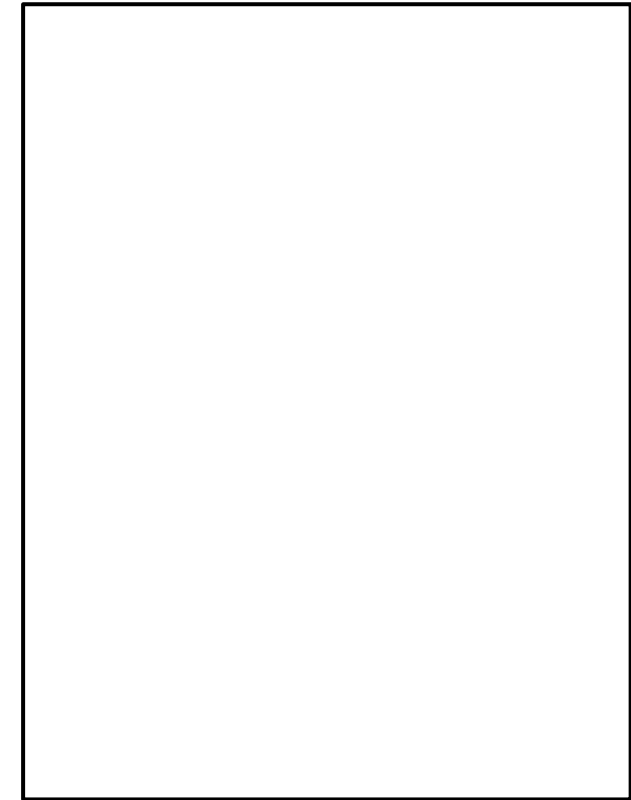
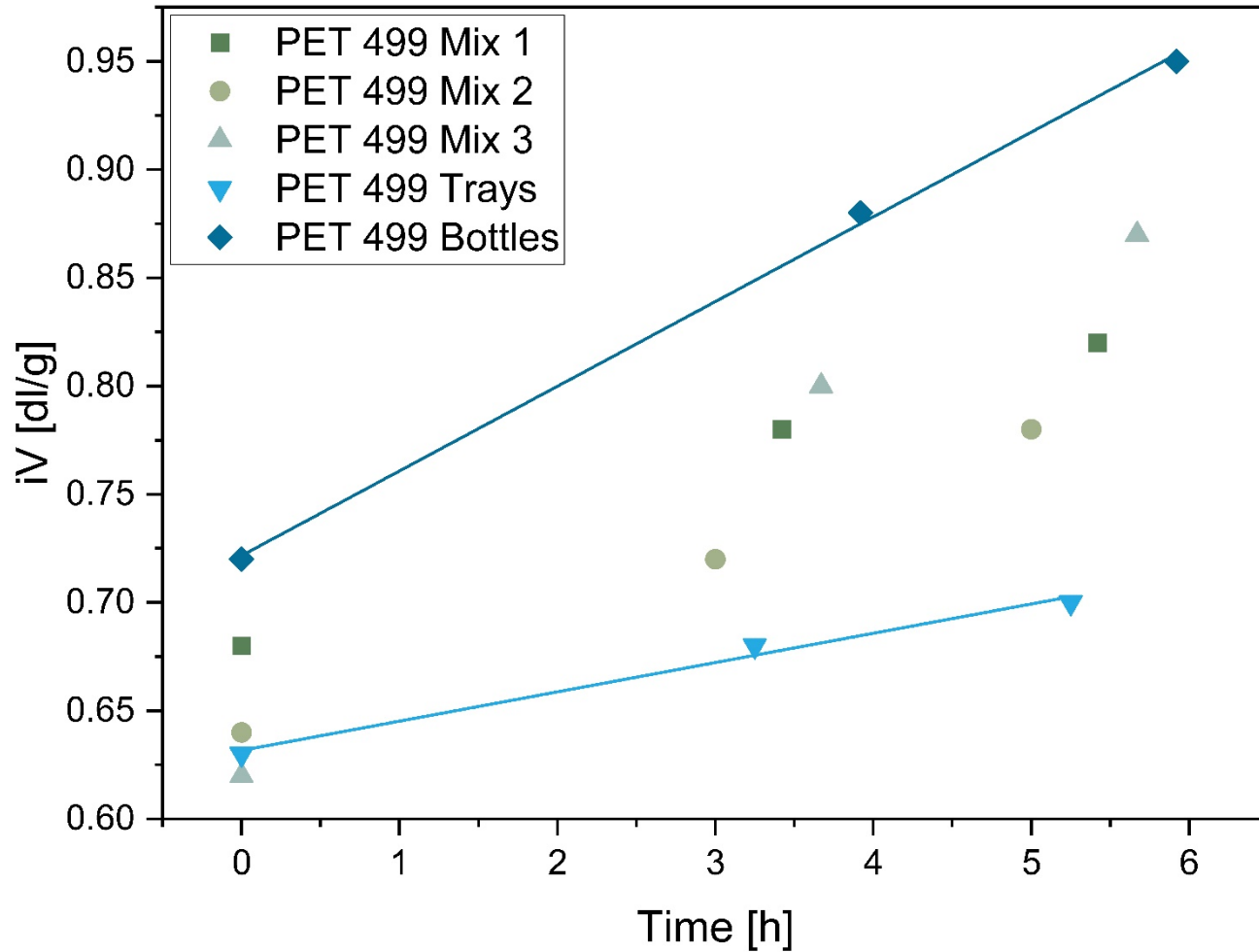


Industrial Trial PET 499 | Reject Composition

PET Recycler



Output Qualities | iV Increase + Flake Composition



PET 499 Trays

Open- & Closed-Loop Strategies | Use Cases

Use Case 1

Bigbag
(non-food)
Open-Loop Recycling



Use Case 2

Bottle
(non-food)
Closed-Loop Recycling



Open- & Closed-Loop Strategies | Use Cases

Use Case 1

Bigbag

(non-food)

Open-Loop Recycling



- **Lower-quality output streams selected**
 - PET 499 Trays
 - PET 499 Mix 1 (Flake Reject)
- **Additional granulation step required**
 - Filtration & Homogenization
 - Avoid agglomeration in SSP reactor
- **Current status**
 - iV increase successful (granules)
 - Production outstanding
- **Outlook**
 - Product tests
 - LCA comparison to beverage bottle flakes and virgin

Open- & Closed-Loop Strategies | Use Cases

Use Case 2

Bottle

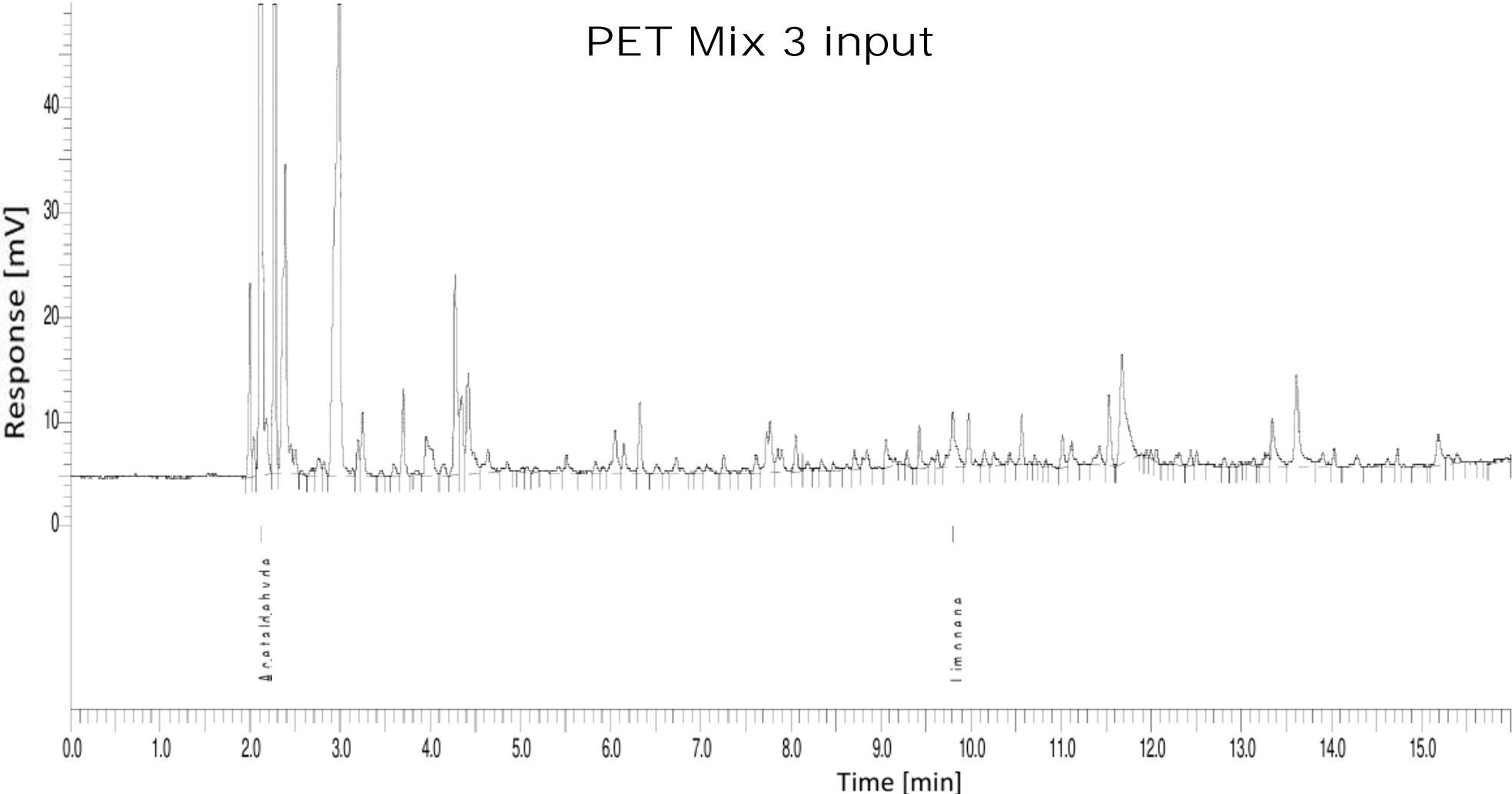
(non-food)

Closed-Loop Recycling



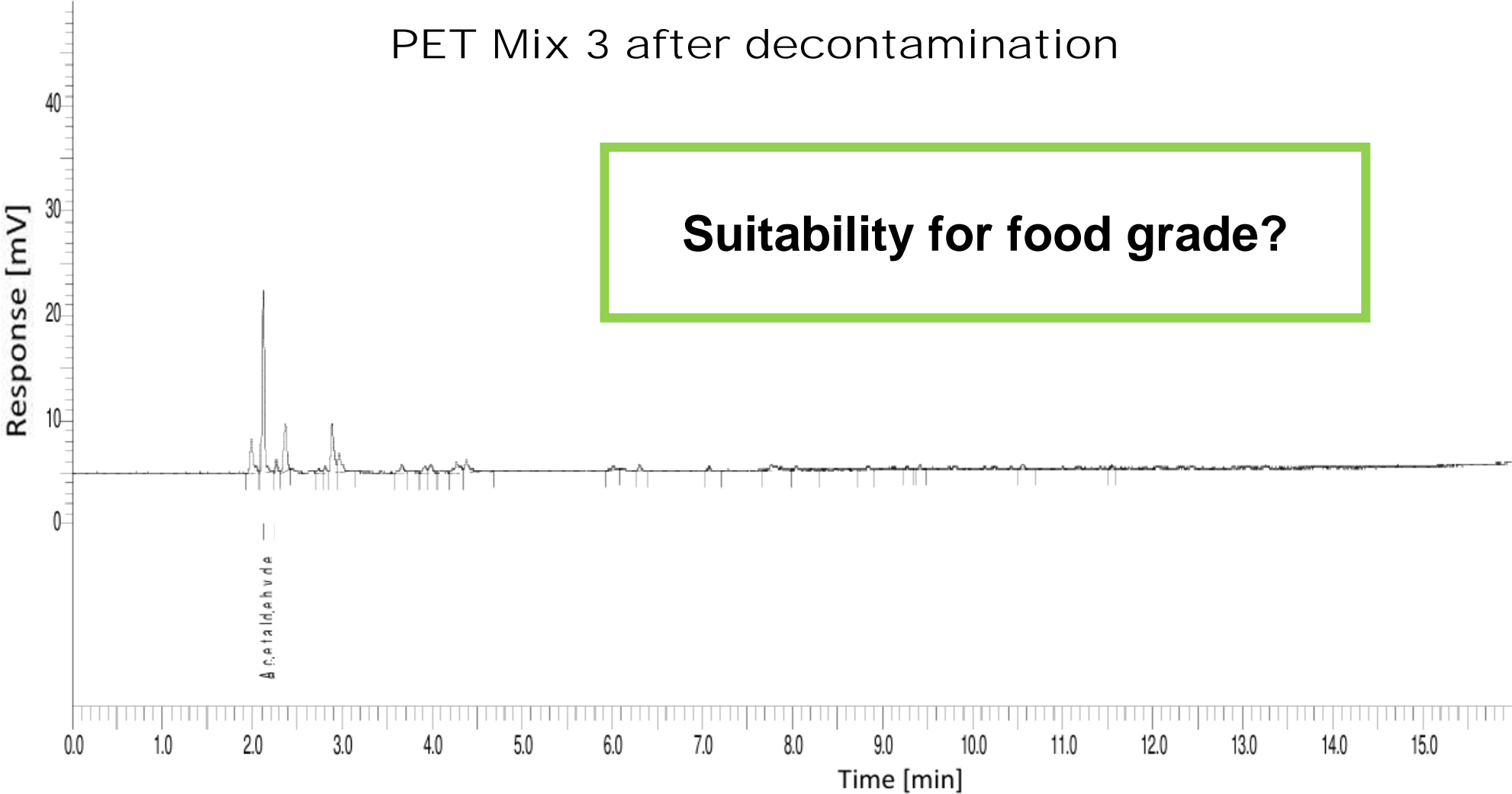
- **Higher-quality output streams selected**
 - PET 499 Bottles
 - PET 499 Mix 3
- **Current status**
 - iV increase successful (granules and flakes)
 - Production outstanding
- **Outlook**
 - Product tests
 - LCA comparison to beverage bottle flakes and virgin

Possibility of Food Contact? | Decontamination Efficiency



Possibility of Food Contact? | Decontamination Efficiency

PET Mix 3 after decontamination




That's it.



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