



# Chemical Recycling & Mass Balance Accounting

ZWE webinar on the impacts of allocating recycled content


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# Circularity of Plastics

## Figures for EU 27+3 in 2020

- 53.6 Mt of plastics consumed
- 29.5 Mt of plastic waste collected and sorted, of which
- 10.2 Mt sent for recycling
- 5.5 Mt were recycled into new plastics

 Scaling up collection, sorting & recycling is needed to reach our recycling & recycled content targets

# Circularity of Plastics

Recycling is one element to make plastics circular

## Recycled plastic content targets

- Plastics Strategy: packaging, construction materials, vehicles
- Single-use plastics Directive:
  - 25% in PET bottles by 2025
  - 30% in all SUP beverage bottles by 2030

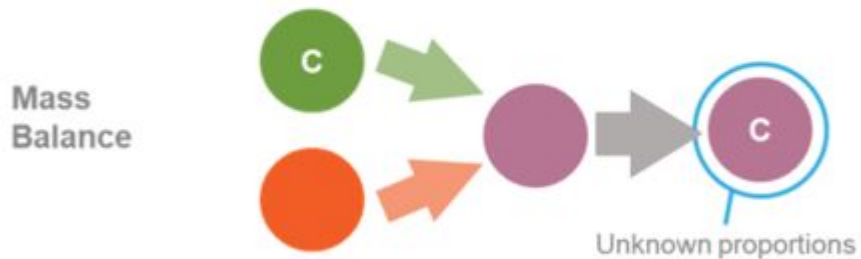
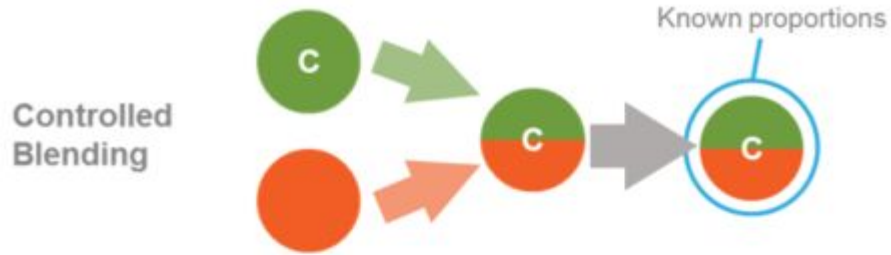


# Chemical Recycling ('long-loop')

Advantages	Disadvantages
recycled material of virgin-like quality	low yield
process some mixed and contaminated plastic waste streams	energy-intensive/GHG emissions
lower environmental impacts than incineration	risk of using input waste that could also be recycled mechanically

- **General rule:** mechanical recycling > chemical recycling > incineration  
(see also JRC, *Environmental and economic assessment of plastic waste recycling* (2023))
- **Chemical recycling complements mechanical recycling if it causes less environmental burden than incineration and virgin plastic production.**

# Calculating Recycled Content: CoC Models

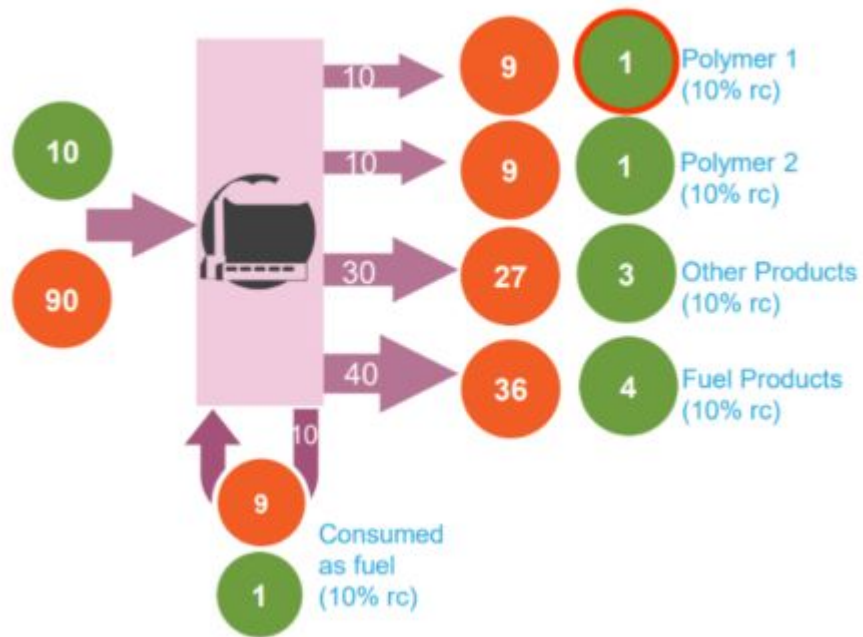


Chain of custody	Mechanical recycling	Chemical recycling	
		Chemical	Thermal
Controlled blending	yes	yes	no
Mass balance	yes	yes	yes

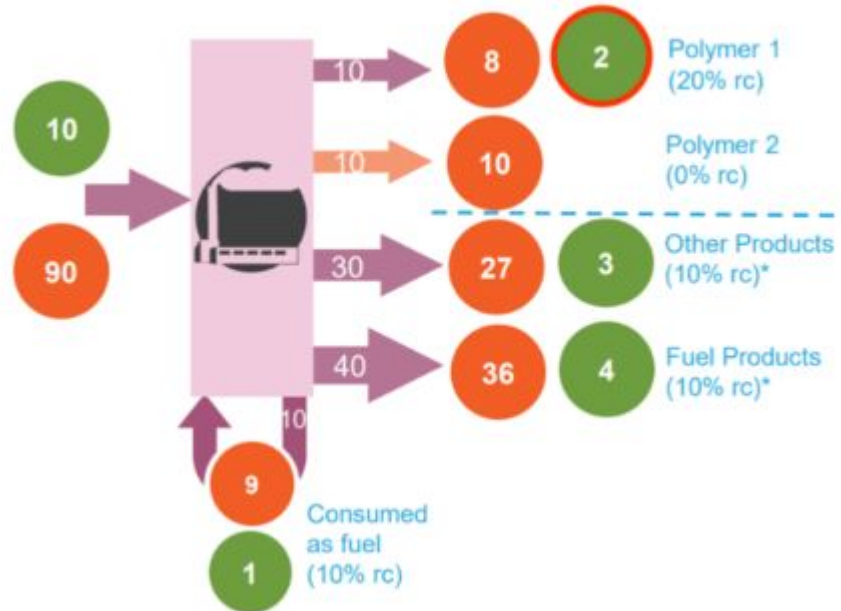
Source: Eunomia, *Study to develop options for rules on recycled plastic content for the implementing act related to single-use plastic bottles under Directive (EU) 2019/904 (2022)*

# Calculating Recycled Content: Mass Balance Allocation Methods

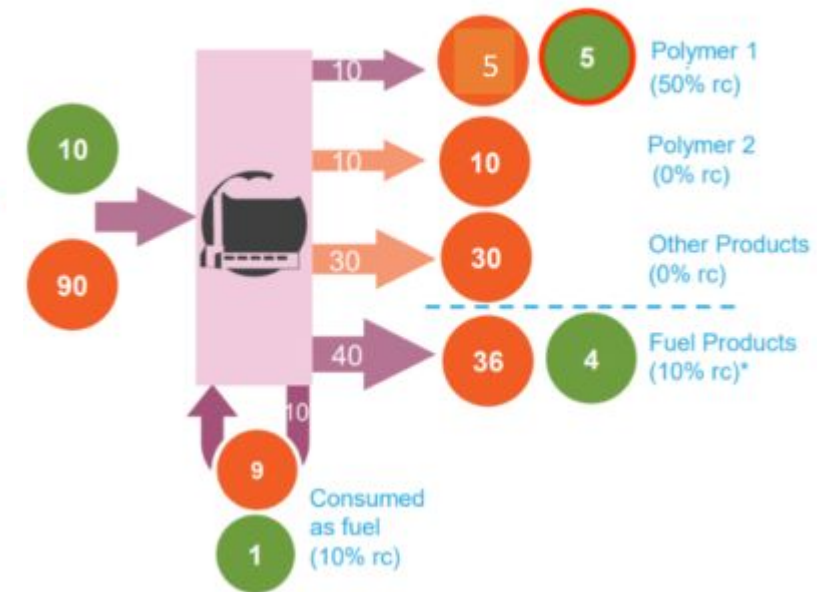
a) Proportional



b) Polymers only



c) Fuel use excluded



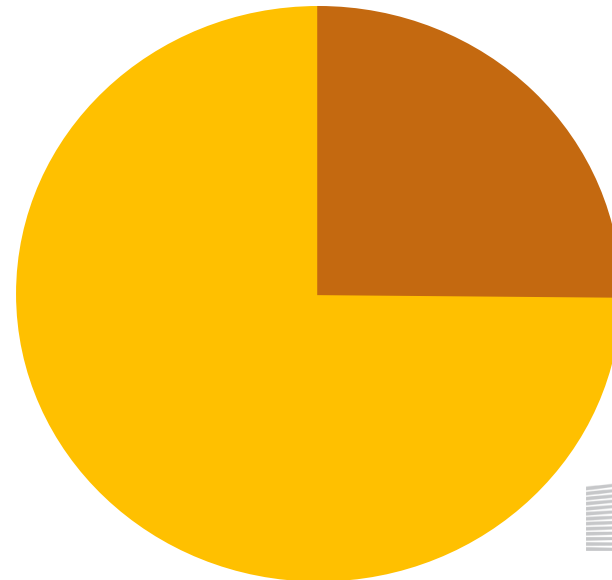
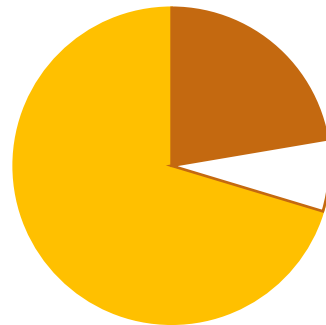
# Calculating Recycled Content: SUP Directive

- 2-step approach for Implementing Decision on recycled content in SUP beverage bottles:
  - (1) simple methodology on mechanically recycled PET
  - (2) amendment to introduce controlled blending and mass balance
- Possible mass balance allocation rules: proportional, polymers only, fuel-use excluded
- Verification via third-party certification
- Step 1: adopt first Implementing Decision in June
- Step 2:
  - discuss COM proposal for amendment with MS
  - public feedback in autumn
  - adoption end 2023

# Key messages

- Both mechanical and chemical recycling need to advance and scale up to reach our circular economy goals
- Chemical recycling should complement mechanical recycling, not replace it
- Cooperation along the value-chain is key

➔ More important than how to split up the cake  
is to make the cake bigger!





# Thank you



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