

**Table S1: Applied formulas for the extrapolation of the waste and recycling potential**

*Rigid PET packaging waste, Austria 2020*

name	indicator / formula	source
separate collection	$m_{i \text{ separate collection}}$ $= m\%_{\text{separate collection}} \times \text{separate collection}_{\text{lightweight packaging 2020}}$	
collection rate or collection efficiency or separate collection rate (SCR)	$c_{eff}(\%) = \frac{m_{i \text{ separate collection}}}{m_{i \text{ collection total}}} \times 100$	[1] [2] [3]
weighed average collection efficiency	$\bar{x}_{c_{eff}} = \sum_{i=1}^n (x_i \times \frac{m_i}{m_{total}})$	
Total collection	$m_{i \text{ collection total}} = \frac{m_{i \text{ separate collection}}}{c_{eff}}$	
Other collection (MSW)	$m_{i \text{ other collection}} = m_{i \text{ collection total}} - m_{i \text{ separate collection}}$	
sorting efficiency	$s_{eff}(\%) = \frac{m_{i \text{ sorted}}}{m_{i \text{ separate collection}}} \times 100$	[2]
Weighed average sorting efficiency		

	$\bar{x}_{seff} = \sum_{i=1}^n (x_i \times \frac{m_i}{m_{total}})$	
sorting rate	$SR = \frac{m_{i \text{ sorted}}}{m_{i \text{ collection total}}}$	[2], [4]
Sorting volume gross	$m_{i \text{ sorted}} = m_{i \text{ separate collection}} \times S_{eff}$	
rigid PET net quantity indicator	$nf_{PET \text{ rigid sorted}}(nf_{SO}) = \frac{m_{i \text{ net PET rigid sorted}}}{m_{i \text{ gross PET rigid sorted}}}$	
PET net = recycling facility input material	$PET_{net} = m_{i \text{ sorted}} \times nf_{PET \text{ rigid sorted}}$	
ALR (average loss rate)	$ALR_{PET \text{ rigid sorted}} = 1 - nf_{PET \text{ rigid sorted}}$	
recycling rate input	$rr_{input} = \frac{PET_{net}}{m_{i \text{ collection total}}}$	[5] [3] [4]
recycling rate PPW total	$rr_{input \text{ PPW total}} = \frac{PET_{net}}{PPW_{2020}}$	

## References

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5. *European Commission. COMMISSION IMPLEMENTING DECISION (EU) 2019/665 of 17 April 2019 amending Decision 2005/270/EC establishing the formats relating to the database system pursuant to European Parliament and Council Directive 94/62/EC on packaging and packaging waste (notified under document C(2019) 2805) (Text with EEA relevance)*, 2019. Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32019D0665&from=EN> (accessed on 7 March 2023).