



Steps toward a sustainable circular economy

A new performance indicator for the circular economy

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Discussion Forum LCA

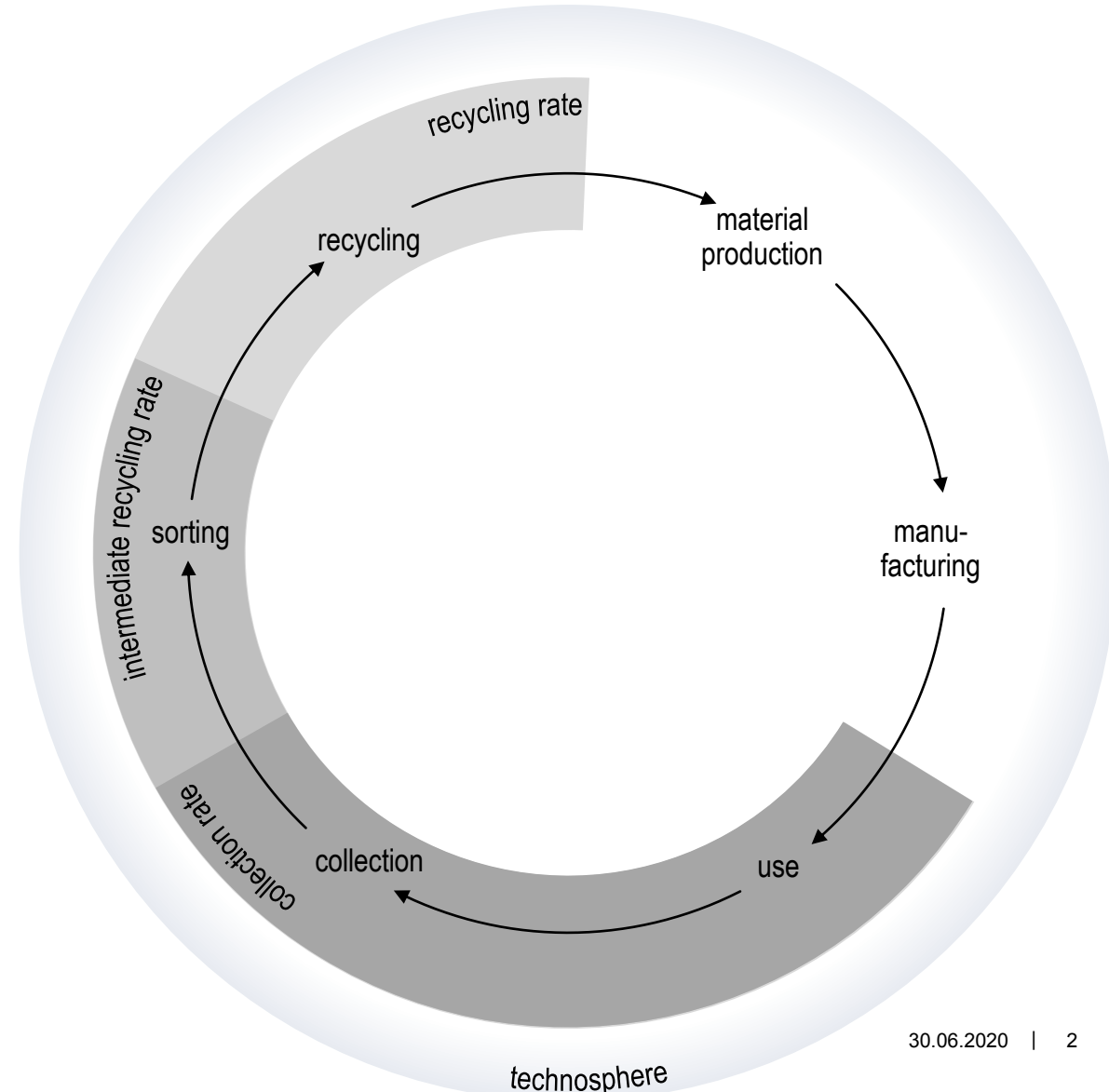
29 June 2020



Current quantitative «Circular Economy» performance indicators...

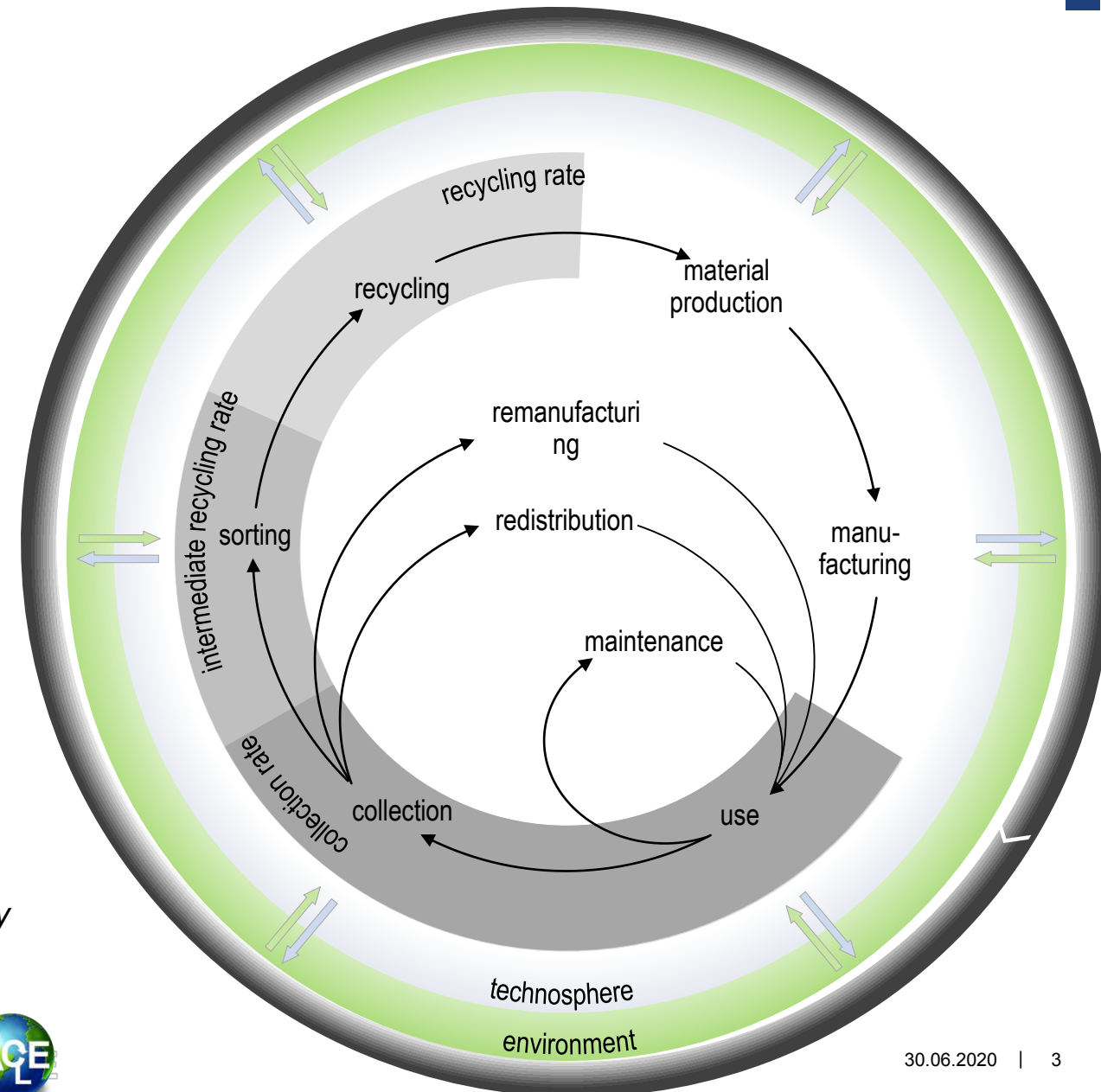
- ... are often waste disposal indicators
- ... rarely address longevity, value change and implications on the use phase
- ... are mostly mere mass-based indicators
- ... often do not allow for assessing all levels of value retention processes

“What gets measured gets managed”
(Peter Ducker)



Sustainability CE indicator

→ To warrant that the circular economy is sustainable, indicators should capture **environmental impacts** of a circular solution with a **systems view**.



Haupt, M. and S. Hellweg. 2019. Measuring the environmental sustainability of a circular economy. *Environmental and Sustainability Indicators 1–2 2019*. DOI: 10.1016/j.indic.2019.100005

Retained environmental value (REV) indicator quantifies the share of the original environmental impact that can be retained through CE solution

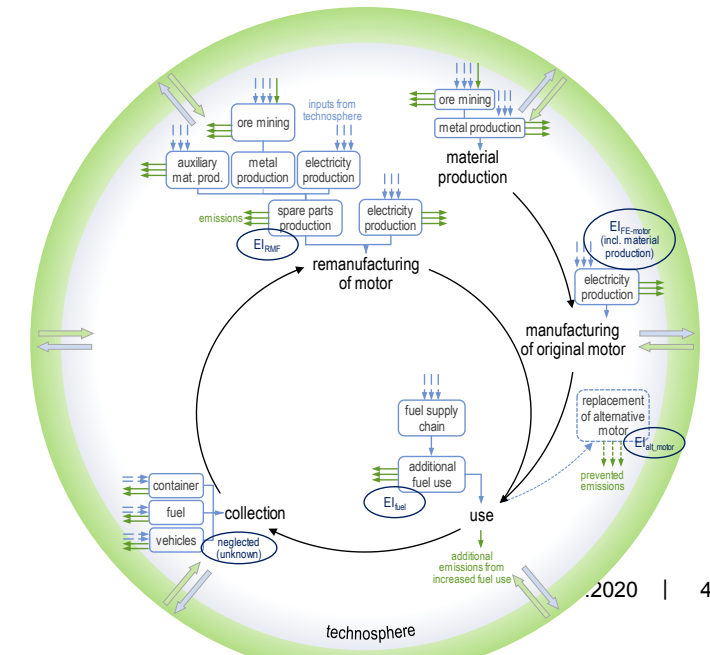
Substitution of primary material/product Impacts value-retention process

$$REV = \frac{\sum_{j=1}^n (EI_{disp,j} - EI_{vrp,j})}{\sum_{i=1}^n (EI_{original,i})}$$

Original "invested" impact

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EI	environmental impact
original	original system (material, product)
disp	displaced system
vrp	value retention process



Retained environmental value (REV) indicator quantifies the share of the original environmental impact that can be retained through CE solution

REV = 100% → full value retained (no losses)

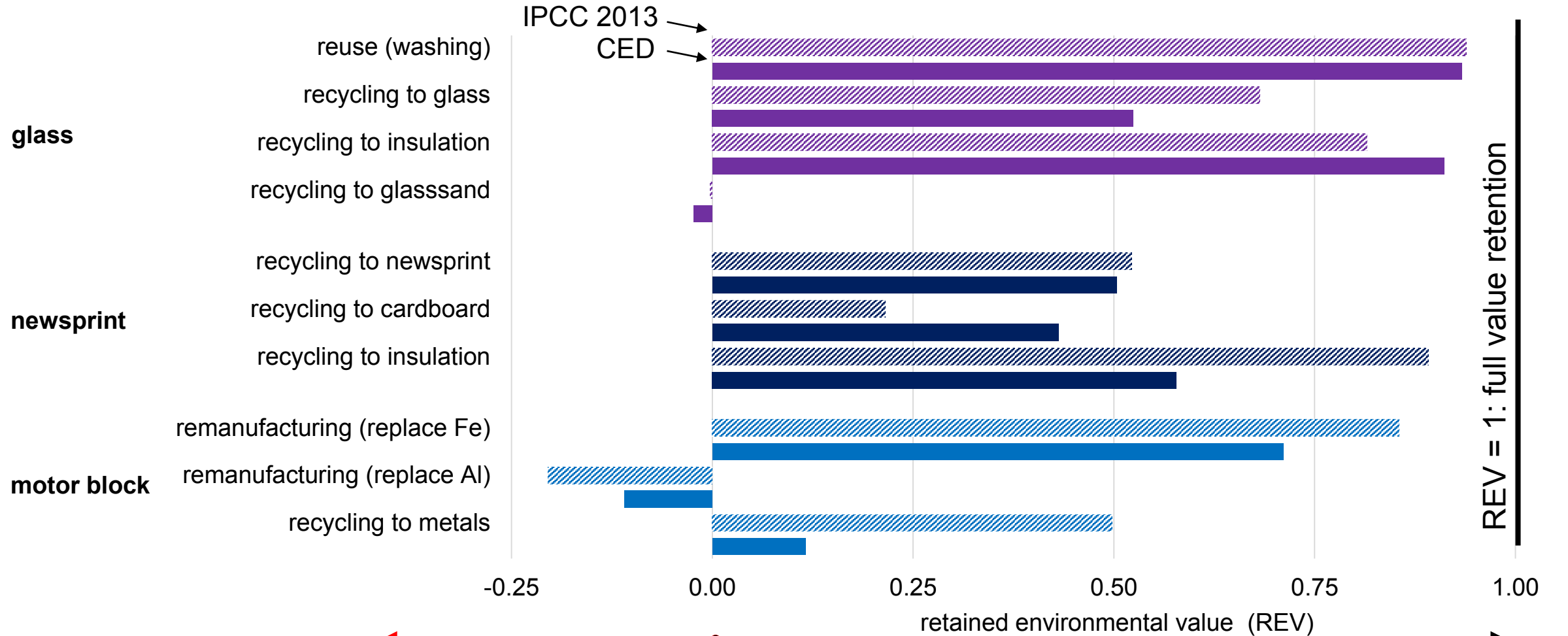
0% < REV < 100% → value partially retained

REV = 0% → does not bring any benefit

REV < 0% → should not be done

Haupt, M. and S. Hellweg. 2019. Measuring the environmental sustainability of a circular economy. *Environmental and Sustainability Indicators* 1–2 **2019**. DOI: 10.1016/j.indic.2019.100005

Retained environmental value (REV) applied to circular solutions



REV < 0: should not be done! Partial value retention (percentage shows degree of value retention)

Conclusions

- REV indicator complies with the CE idea of value retention
- REV gives a relative ranking between different CE solutions and can hence support CE decisions
- Covers all value retention processes and also considers “side effects” (e.g. when the technology is not yet mature)
- REV can be implemented with any environmental impact category (using LCA methodology)
- Currently an economic REV indicator is developed within the TACLE project

Thank you!

Team **TACLE** (**T**owards **A** sustainable **CircuLar** **E**conomy)

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