

Creating an LCA end-of-life approach
taking into account all the benefits of
material-loops

**End of Life and Recycling: How to
consider End of Life as an enlightened
design choice?**

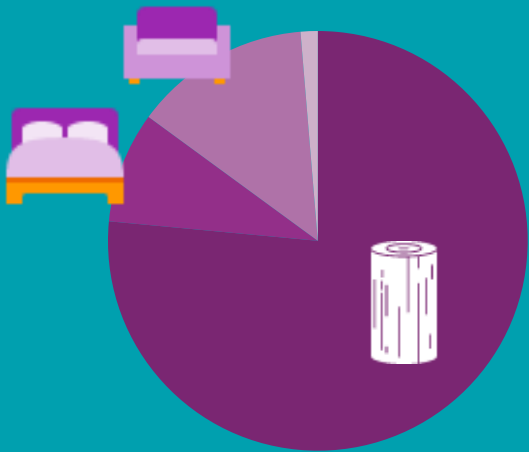
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Marcial Vargas-Gonzalez – Senior Consultant

marcial.vargas-gonzalez@quantis-intl.com / 06 61 75 23 30

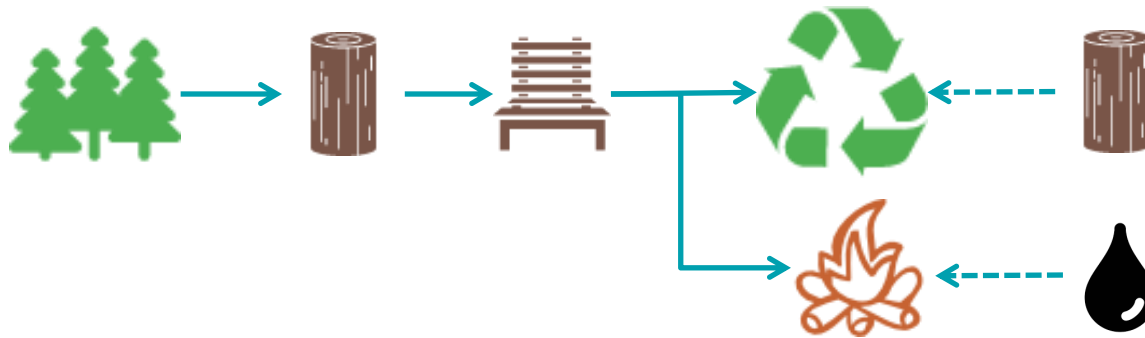


Every year 1.2 million tons of furniture waste are produced in France



- Before 2011, 56 % of furniture waste wasn't recycled or used for energy recovery.
- Eco-mobilier's task is to insure the management of furniture waste as sustainably as possible by managing :
 - Logistics
 - Sorting
 - Recovery techniques

What happened to your old chair?



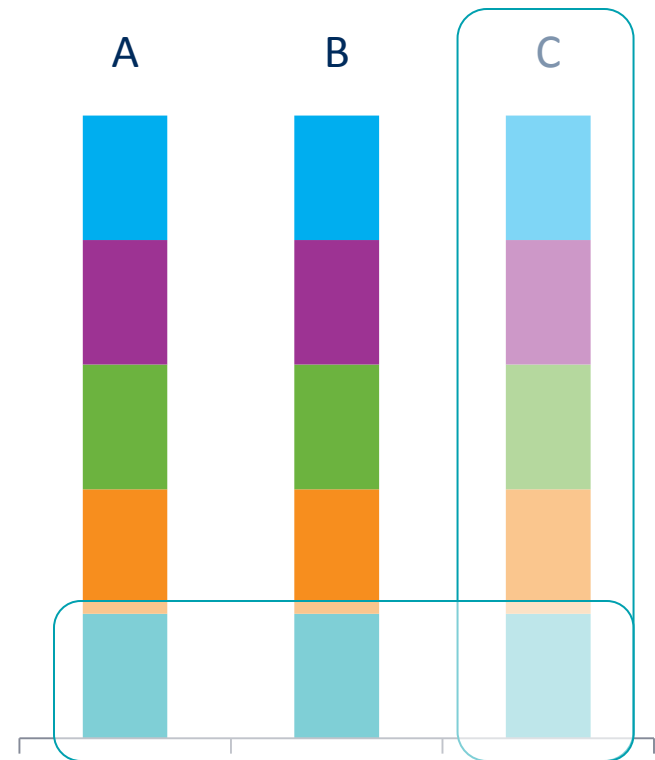
Is recycling the best solution?



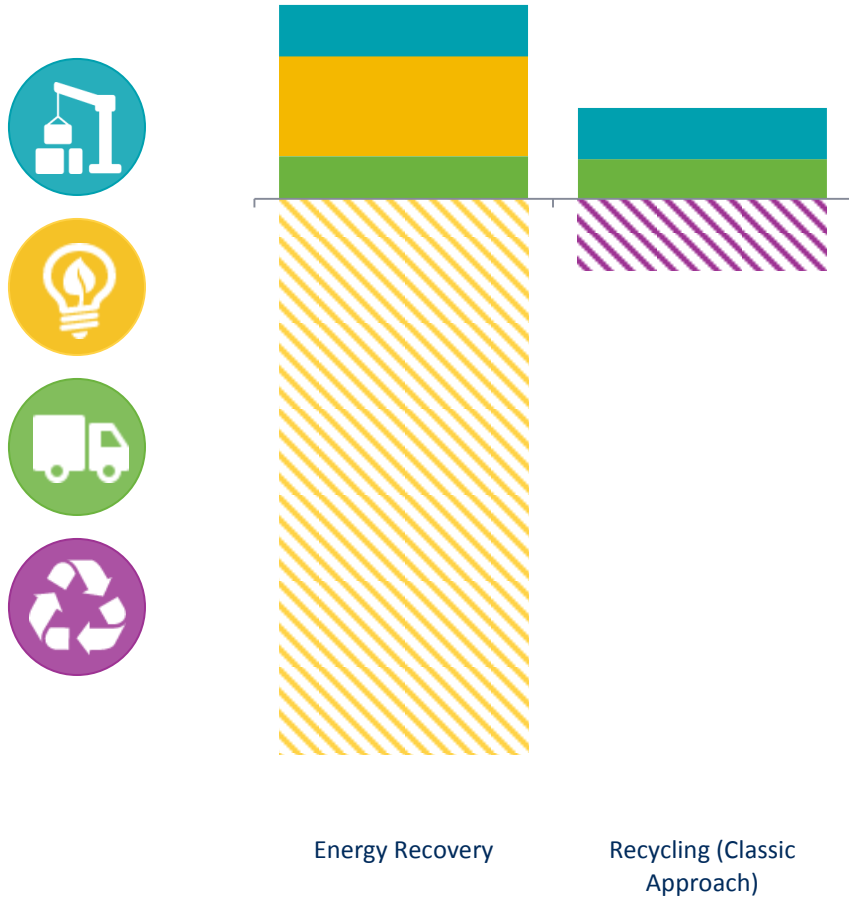
What does the European Commission say?



How do we evaluate it?



The Results



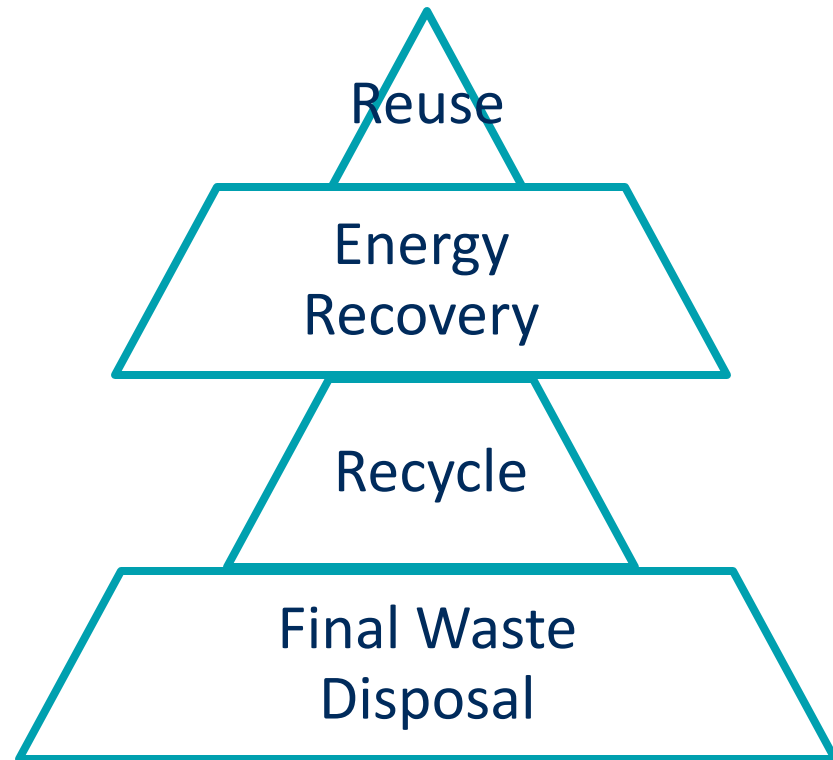
Key messages

- 1 The impacts of energy recovery are easily compensated by its benefits
- 2 Recycling might not be the best solution...

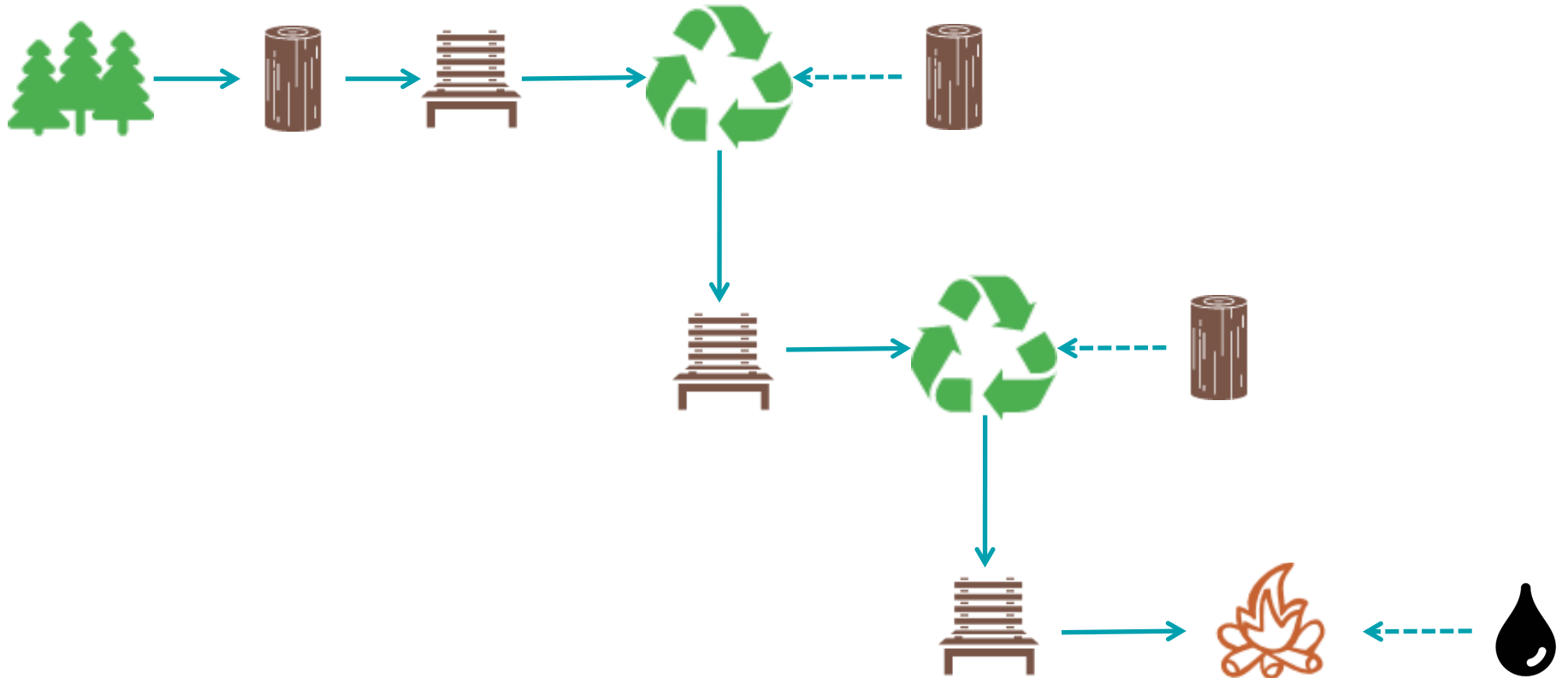
Expectation



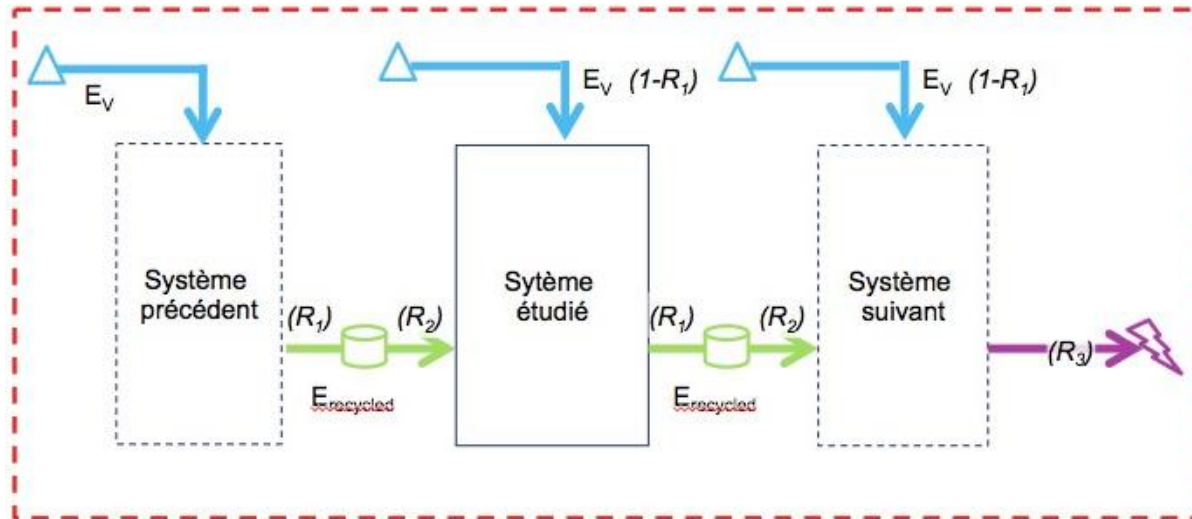
Reality



What is wrong with the previous picture?



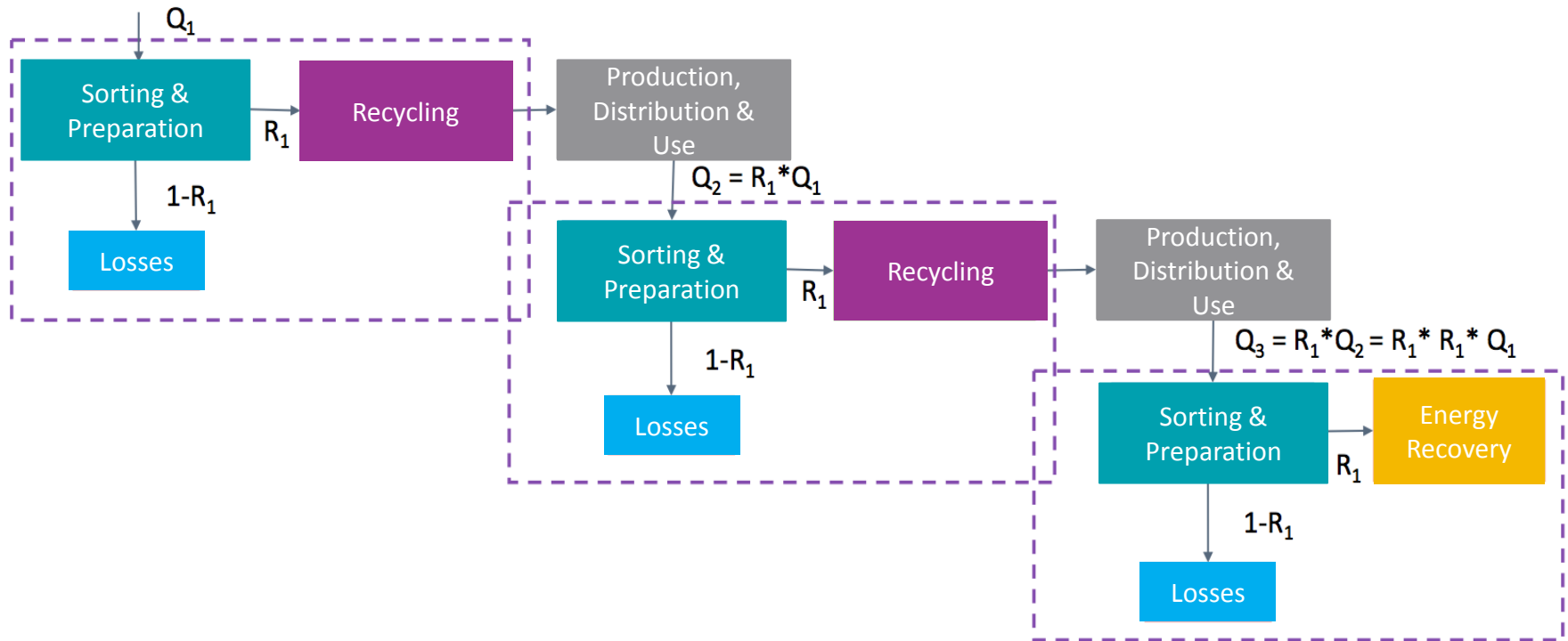
Looking for inspiration in Product LCA



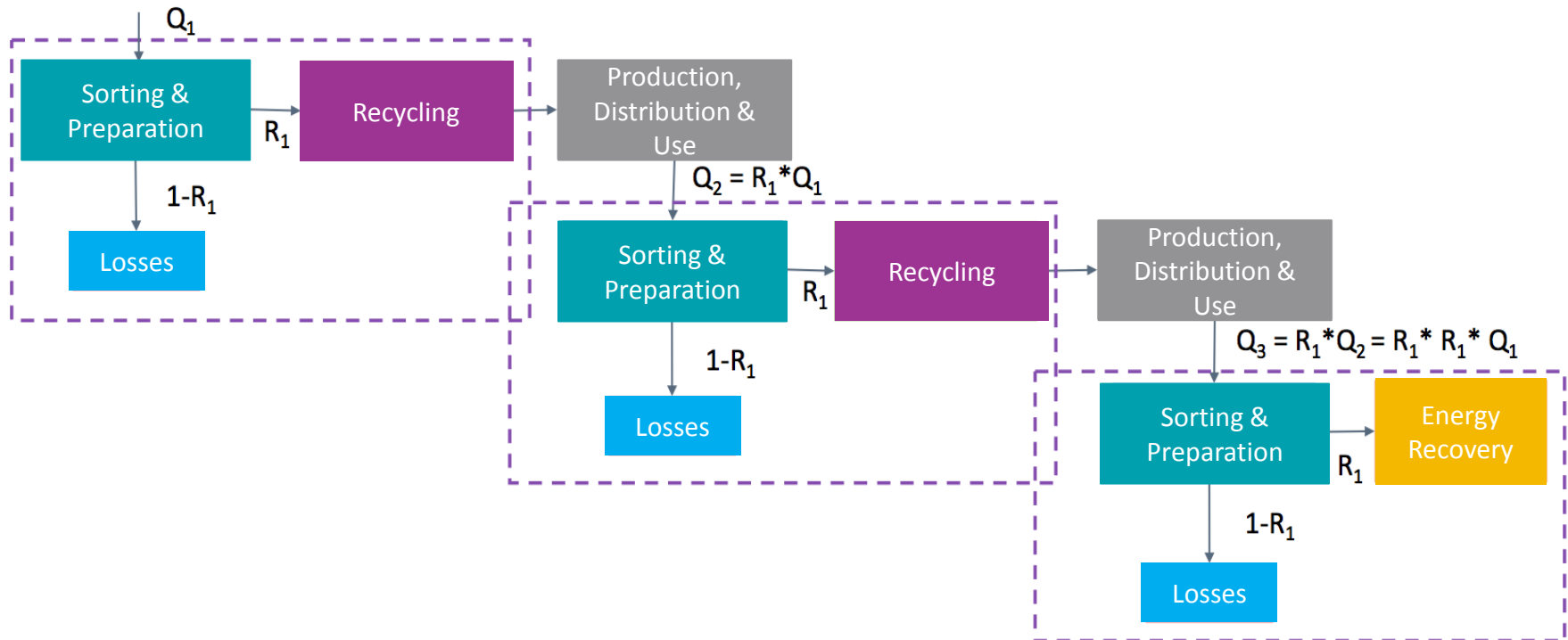
Utilisation	Impacts de l'huile vierge	Impacts de l'huile régénérée	Impacts de l'incinération
1 ^{ère} utilisation	E_v	0	0
2 ^{nde} utilisation	$(1-R_1) \times E_v$	$R_2 \times E_{Recycled}$	0
3 ^{ème} utilisation	$(1-R_1) \times E_v$	$R_2 \times E_{Recycled}$	0
...
N ^{ème} utilisation	$(1-R_1) \times E_v$	$R_2 \times E_{Recycled}$	$R_3 \times (...)$

$$EF = \frac{(1 + (N - 1) * (1 - R_1)) \times E_v + (N - 1) \times R_2 \times E_{recycled} + R_3 \times (...)}{N}$$

The idea



Translating the idea



$$EF = \frac{1 - R_1^N}{1 - R_1^{N+1}} * EF_{Rec} + \frac{(1 - R_1) * R_1^N}{1 - R_1^{N+1}} * EF_{Energ}$$

The new results

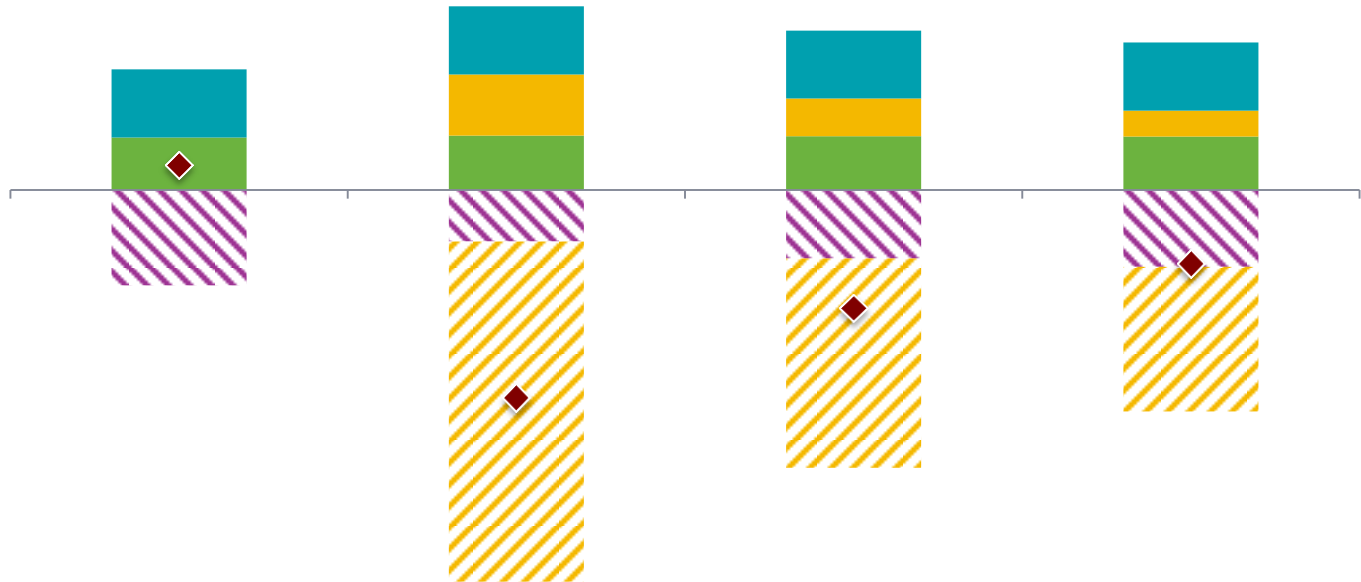


Recycling (Classic Approach)

Recycling (1 Loop)

Recycling (2 Loop)

Recycling (3 Loop)

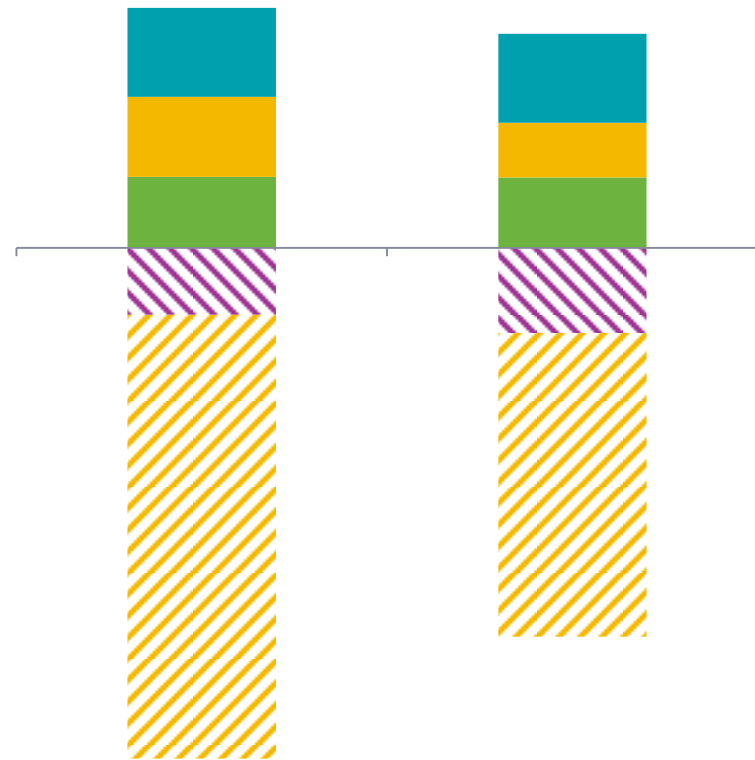


Reducing recycling waste and improving recyclability

By using an approach integrating every recycle loop it is easier to **track the consequences of improving the recycling rates and reducing recycling losses**

Recycling (2 Loop) $R=0,86$

Recycling (2 Loop) $R=0,95$



Pros and Cons

Pros :

- Useful when **comparing waste management systems**
- Interesting to **evaluate the performance of recycling systems** beyond the classic approaches (0/100, 50/50, ...)

Cons :

- The waste is considered as something inherently exists (« **More waste please!** »)
- It can be counterintuitive and lead to **controversial results**



Thanks for your attention

For more informations:
Marcial Vargas-Gonzalez
marcial.vargas-gonzalez@quantis-intl.com