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Circular (de)construction in SUPERLOCAL and DRIVE 0

Michiel Ritzen, 14 February 2020

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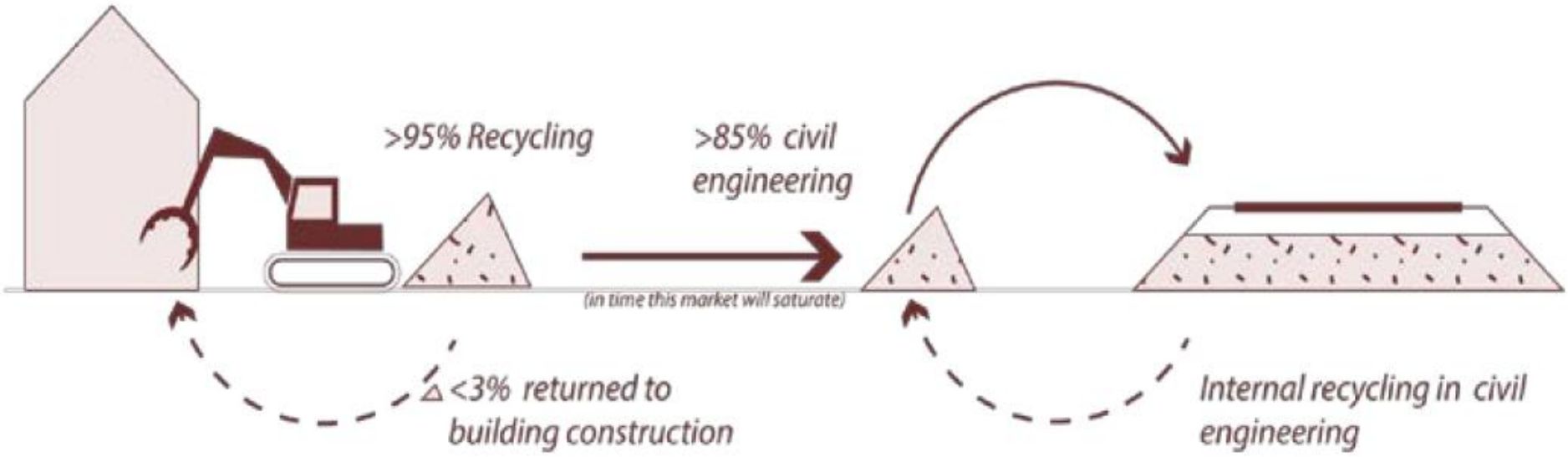
Current demolition practice in the Netherlands



Source: TNO, 2017

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MEENS


Zone
CITY
CONTAINER







Background 1/2

1. Transition towards a highly decarbonized built environment in 2030.
2. Transition towards a 50% circular built environment in 2030.

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Background 2/2

1. Significant restructuring assigment in the region of Parkstad due to demographic changes:
   a. Demolition of 10,000 dwellings;
   b. Demolitition of 150,000 m^2 utility and retail floor surface;
   c. Energy efficient retrofit of 30,000 dwellings;
   d. Realisation of 1,500 NZEB dwellings;
   e. With circular principles.

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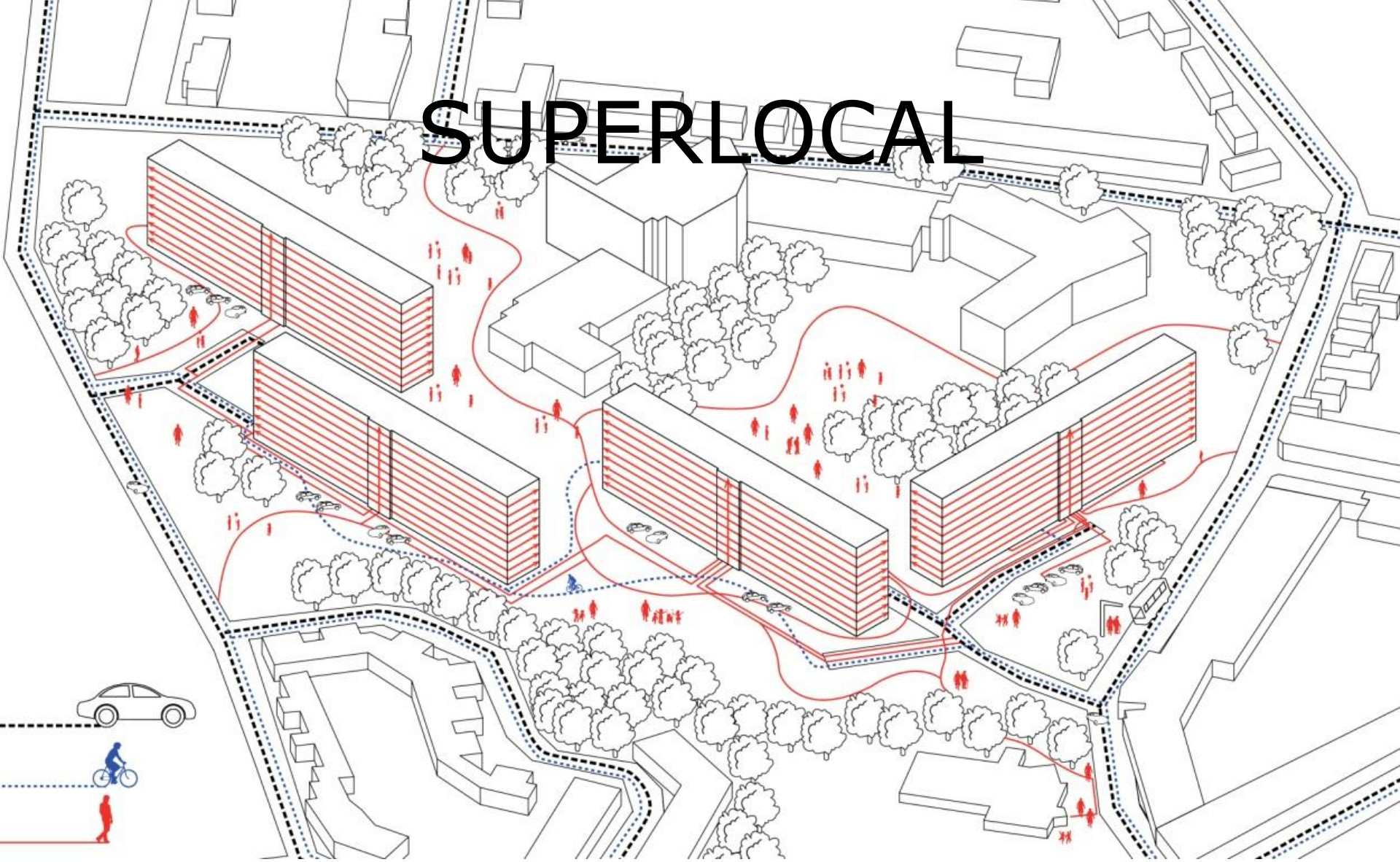
SUPERLOCAL



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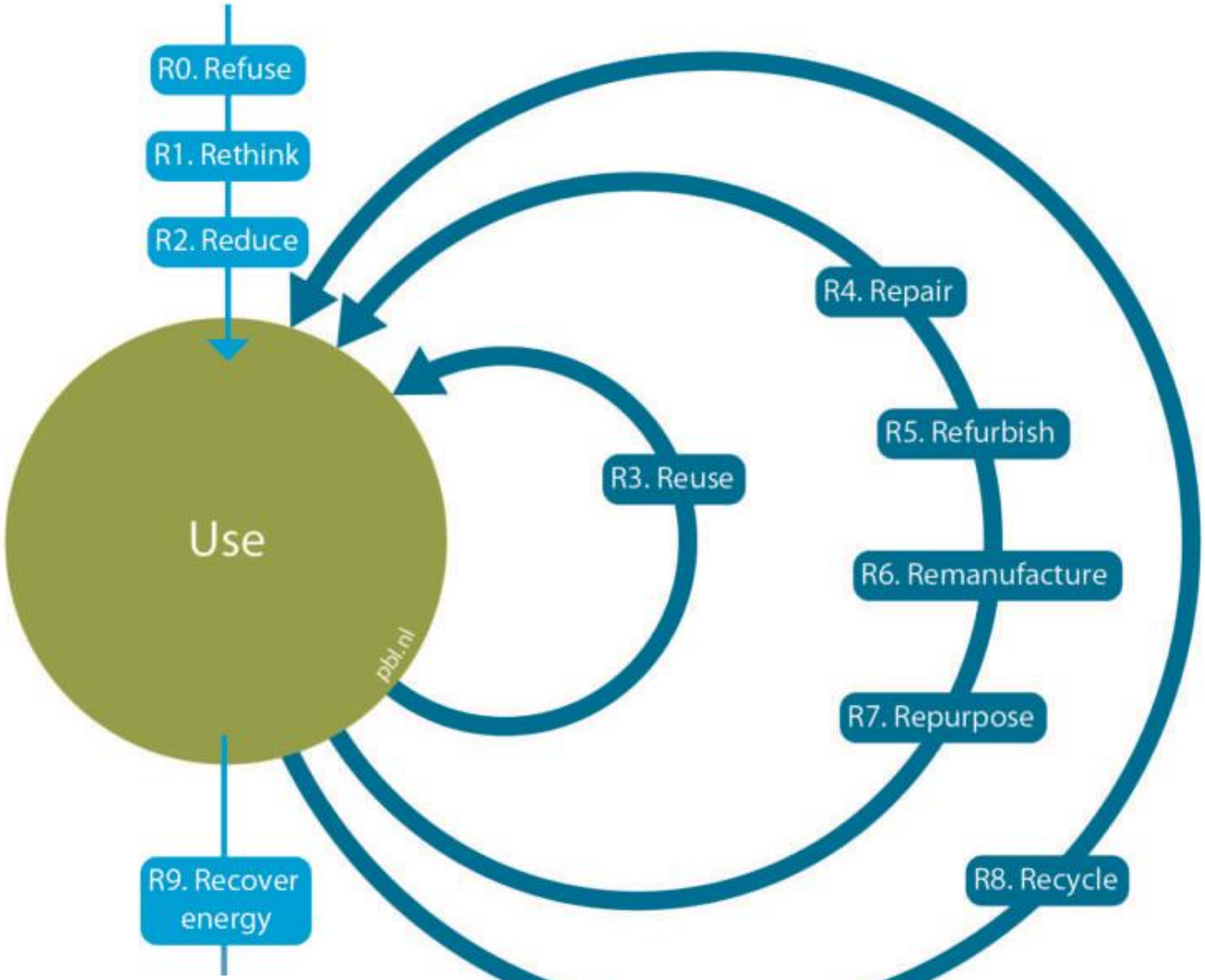

Bron: PBL

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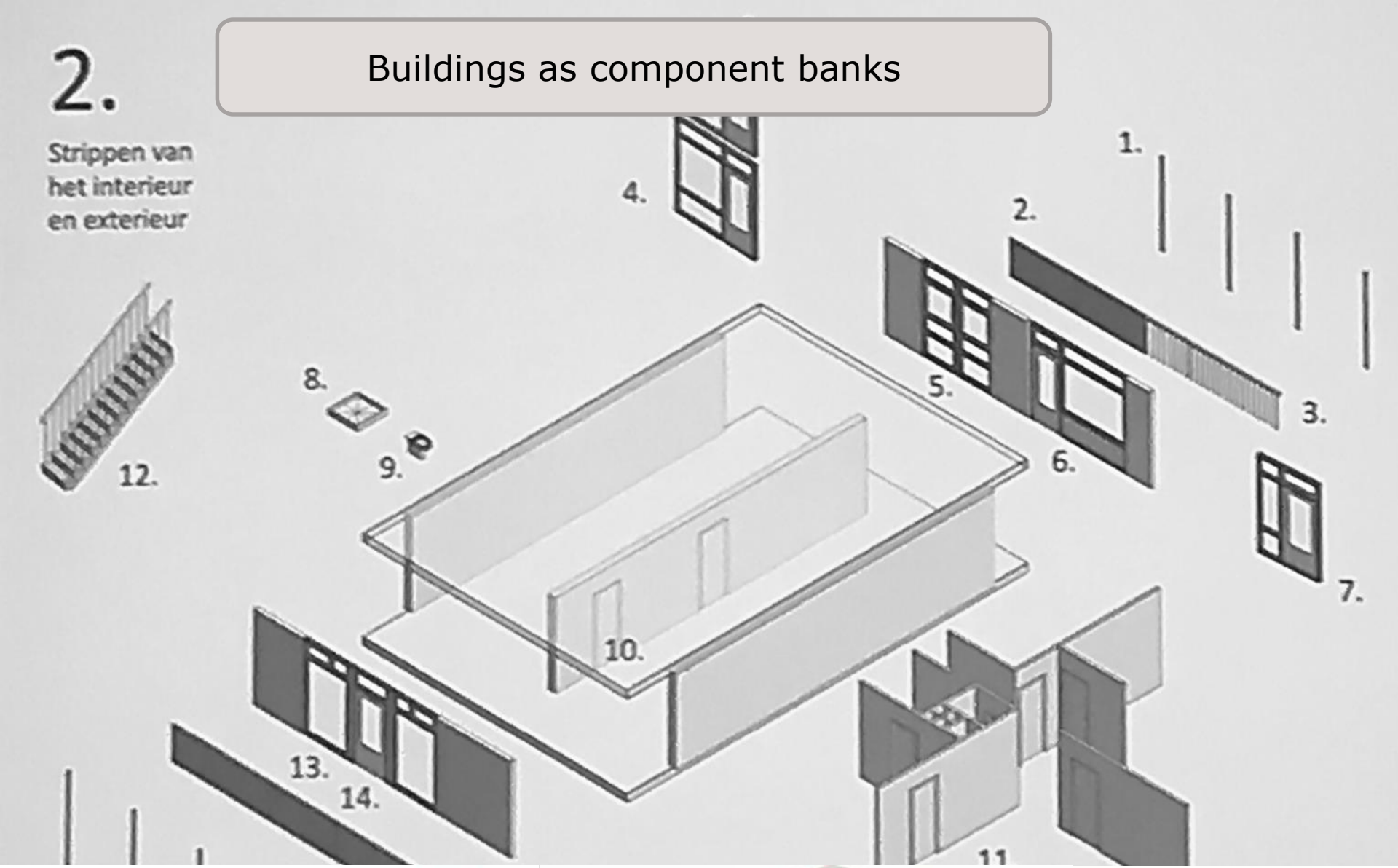
Buildings as component banks



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toilet
douche


3. demonstrate – 15 dwellings

2. experiment – 3 dwellings

1. trial – expo building

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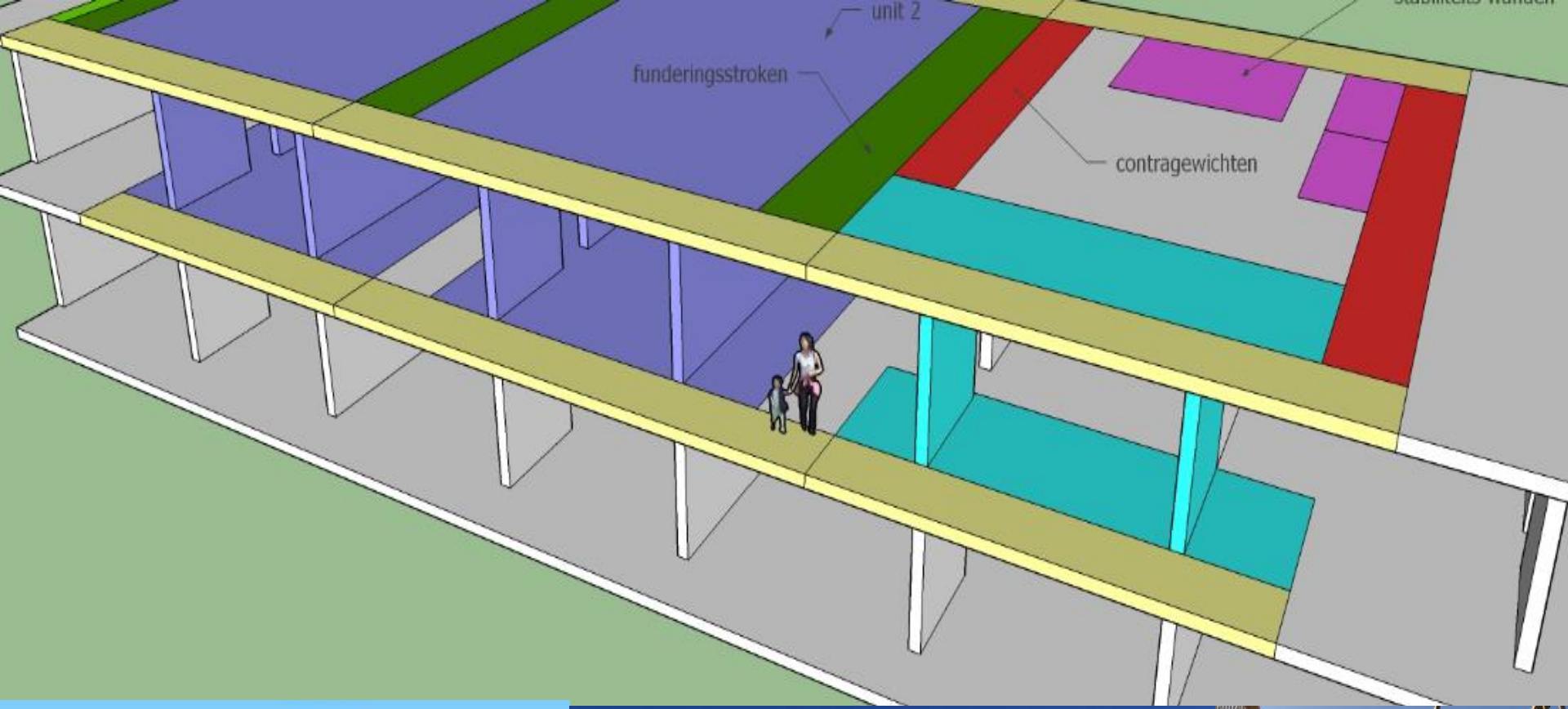
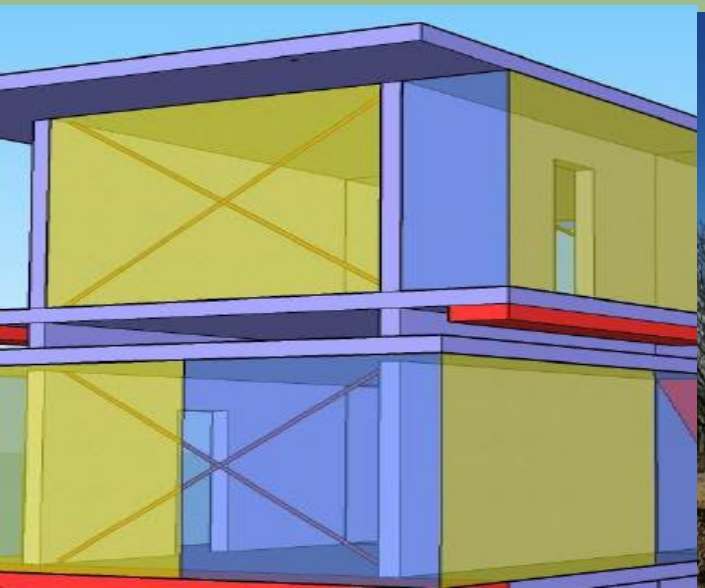
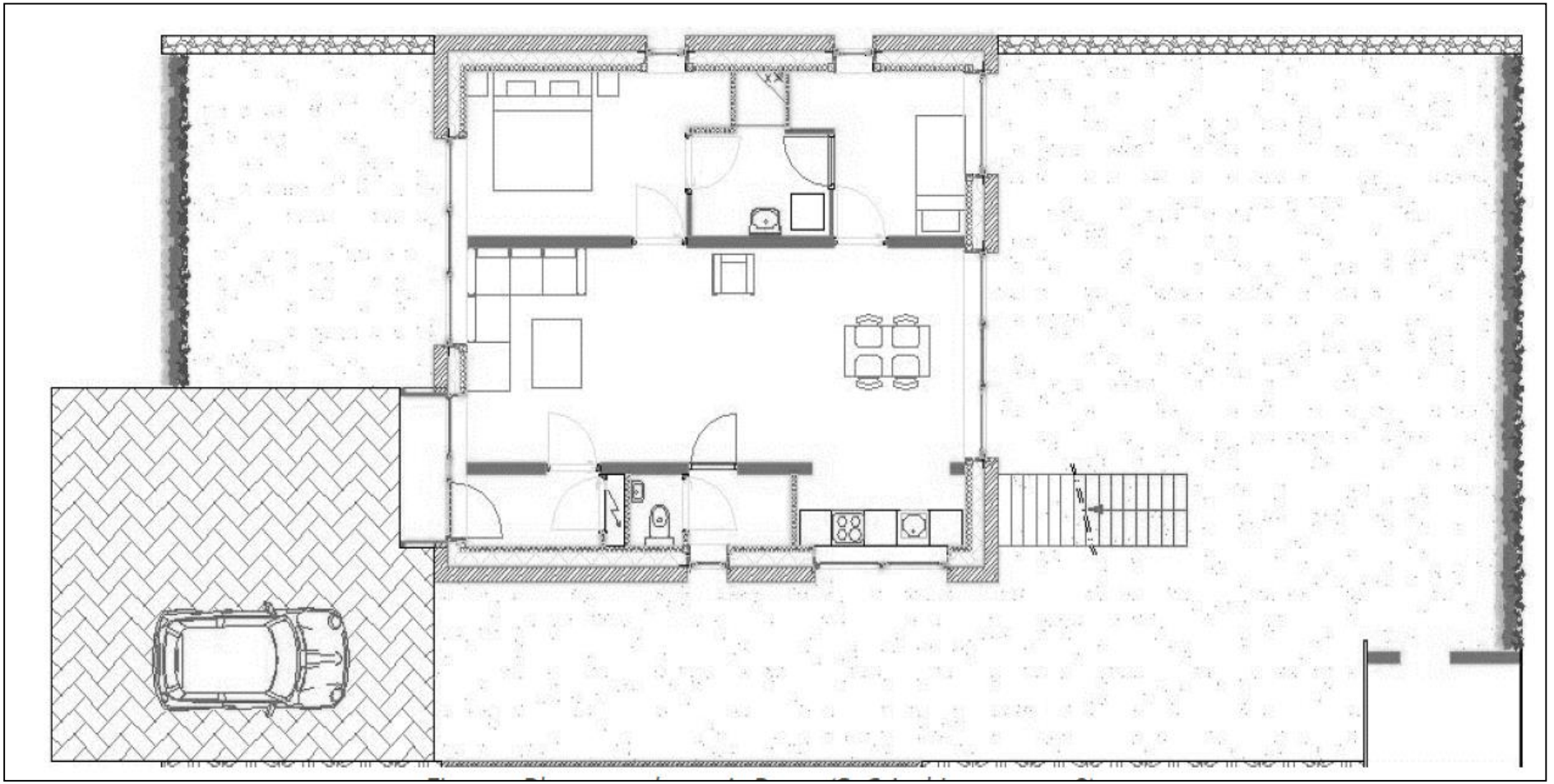

unit 2
funderingsstroken
contragewichten



3 dwellings

Largest dwelling



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Most circular…

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Least circular…

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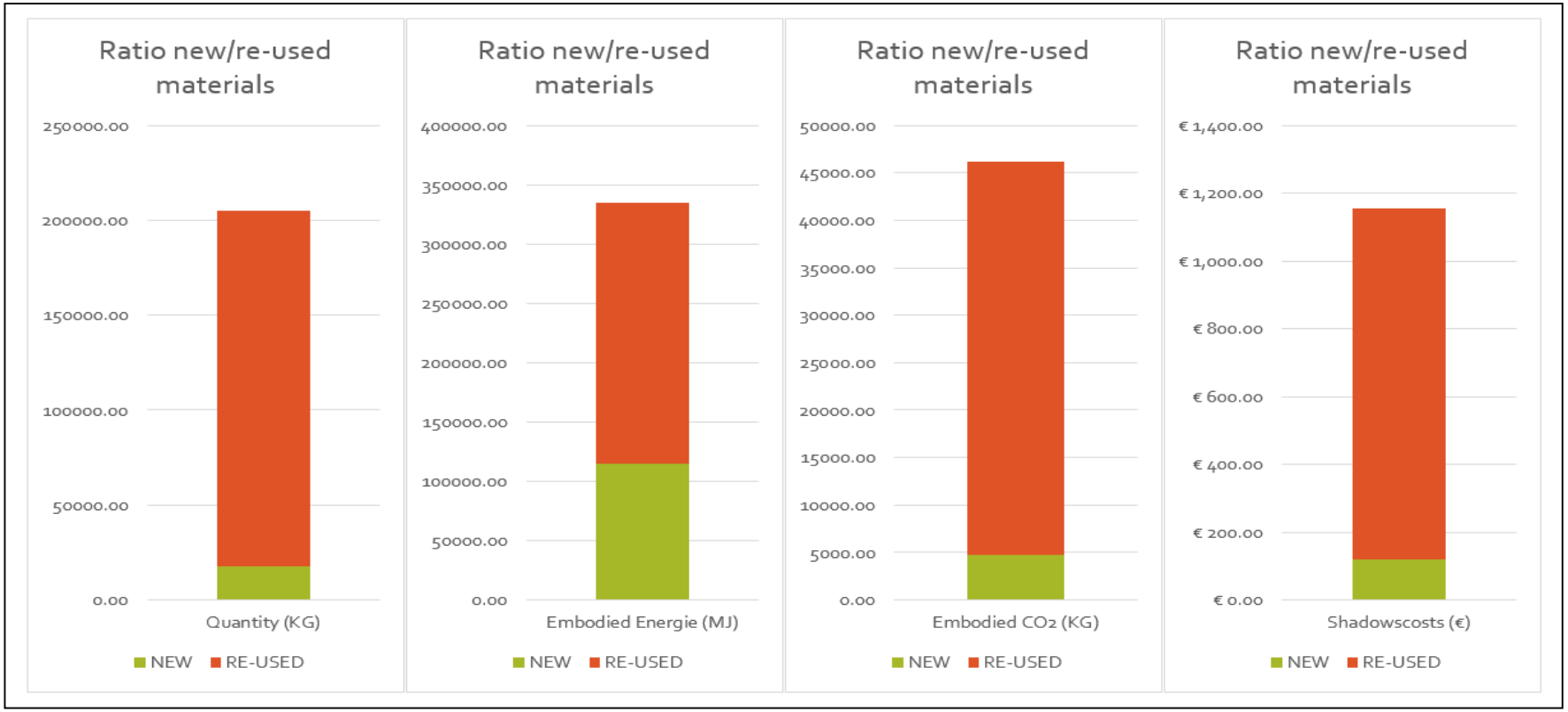
Environmental impacts



Ritzen, et al, 2018

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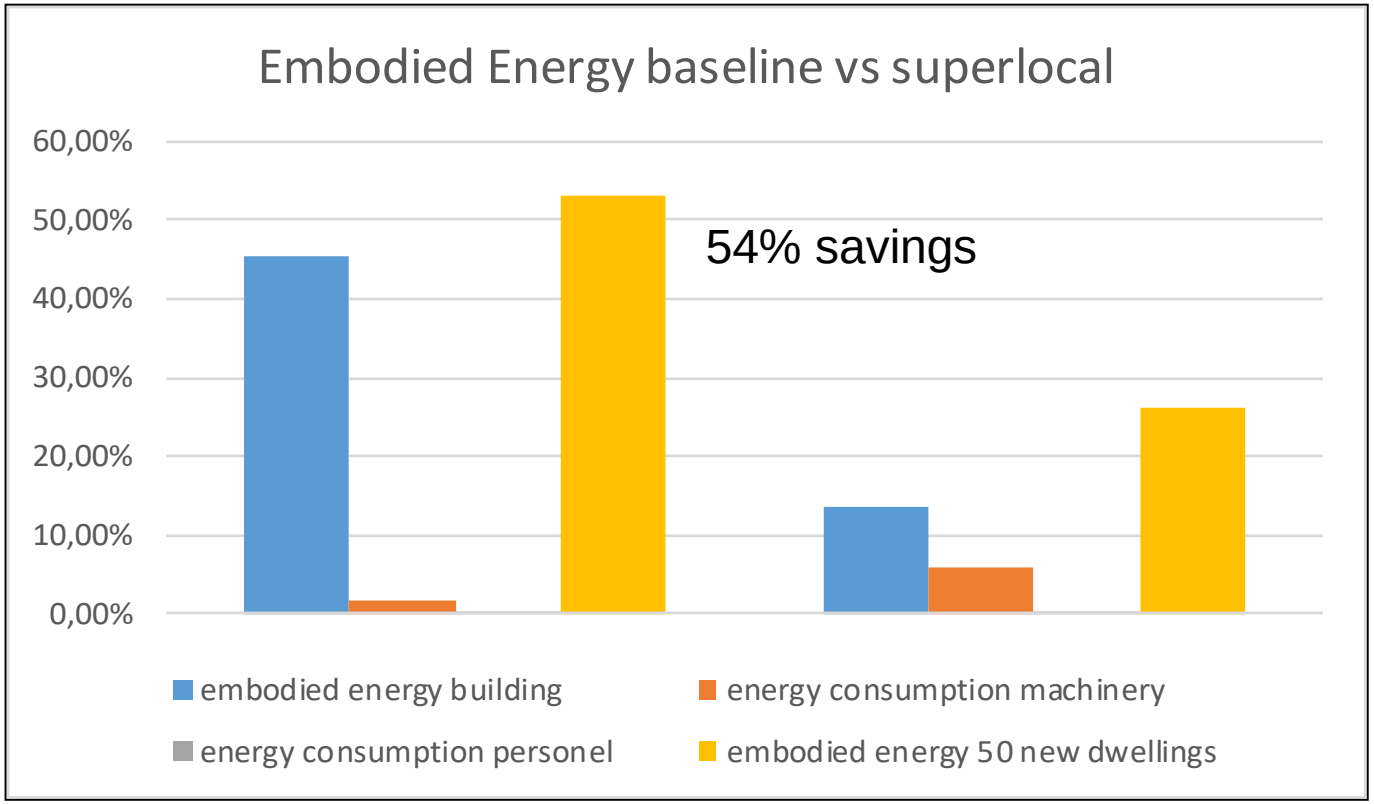
Environmental impacts



Ritzen, 2020

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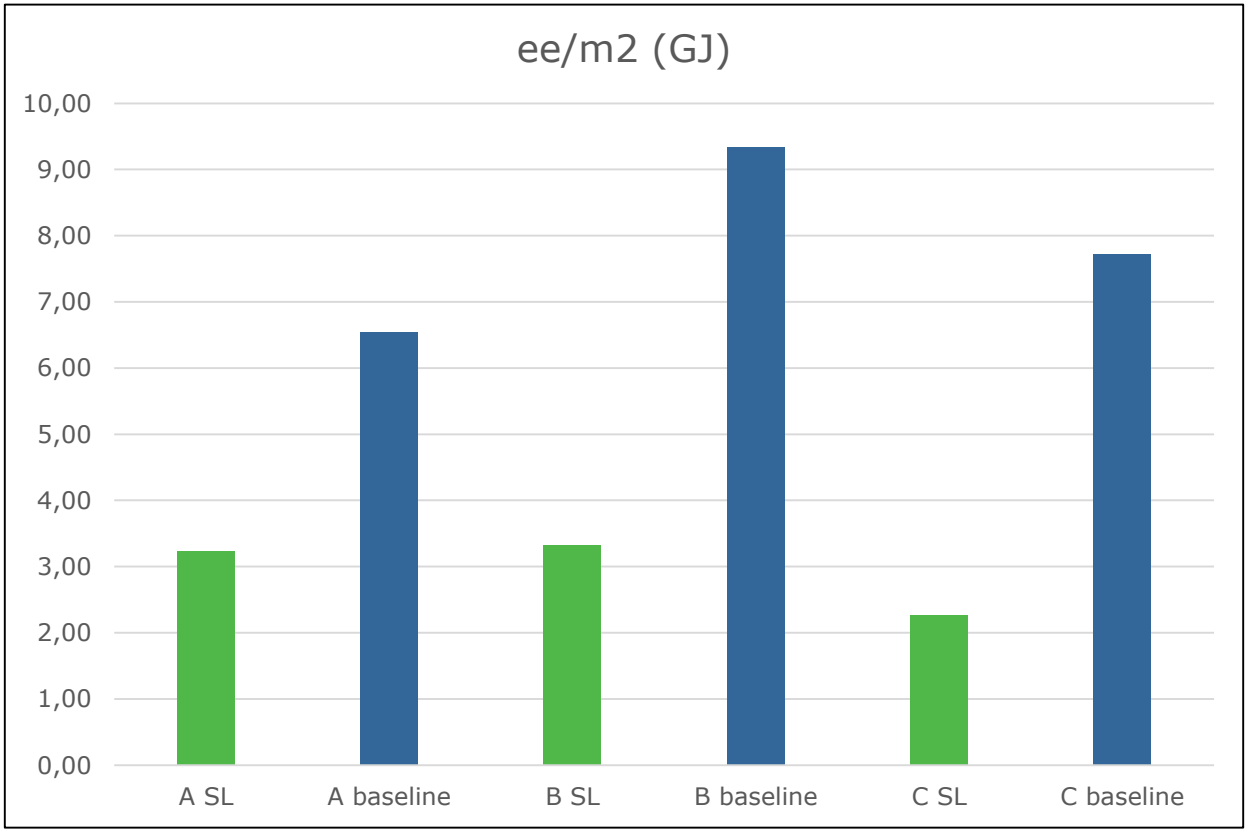
Environmental impacts



Driessen, Ritzen, 2020

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The challenge for DRIVE 0….

Source: twitter, 2017

Strategy DRIVE 0

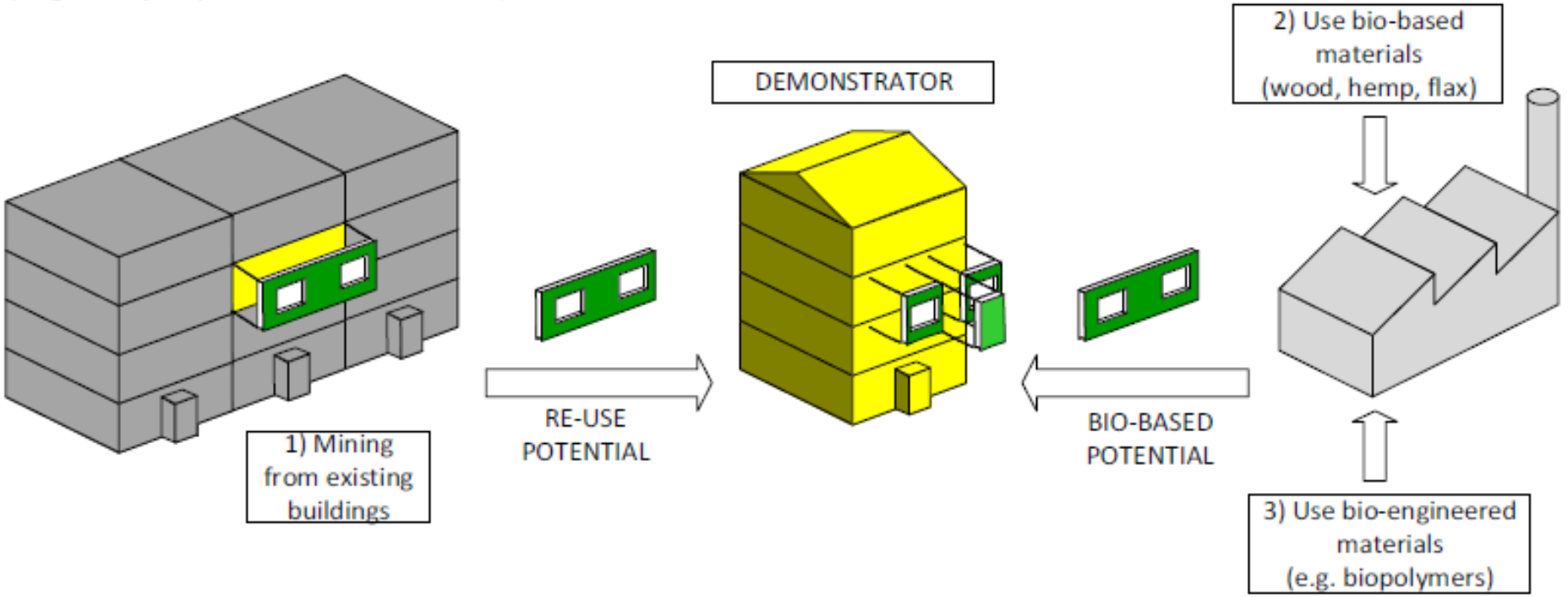

Fig. 4: Conceptual model of DRIVE 0 circular deep-renovation solutions

John van Oorschot, Michiel Ritzen, H2020 project DRIVE 0

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Coady Architects
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Salfo & Associates SA
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Valencia Institute of Building
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Aliva
www.aliva.it

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www.unibo.it

Huygen Installatie Adviseurs
www.huygen.net/

Institute for Innovation and Development of University of Ljubljana
www.iri.uni-lj.si/

WEBO
www.webo.nl/

Zuyd Hogeschool

Timbeco
www.timbeco.ee

National and Kapodistrian University of Athens

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Demonstrators

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Lessons learned

- 95% re-use possible with 50% energy/CO_2 savings
- Labor intensive → high costs
- Building- and logistics process needs to be optimized
- Quality garantee and certification is sometimes impossible
- Focus on single-cycle circularity

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Please consider…

Do not design to construct, but how to disassemble and re-use.

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