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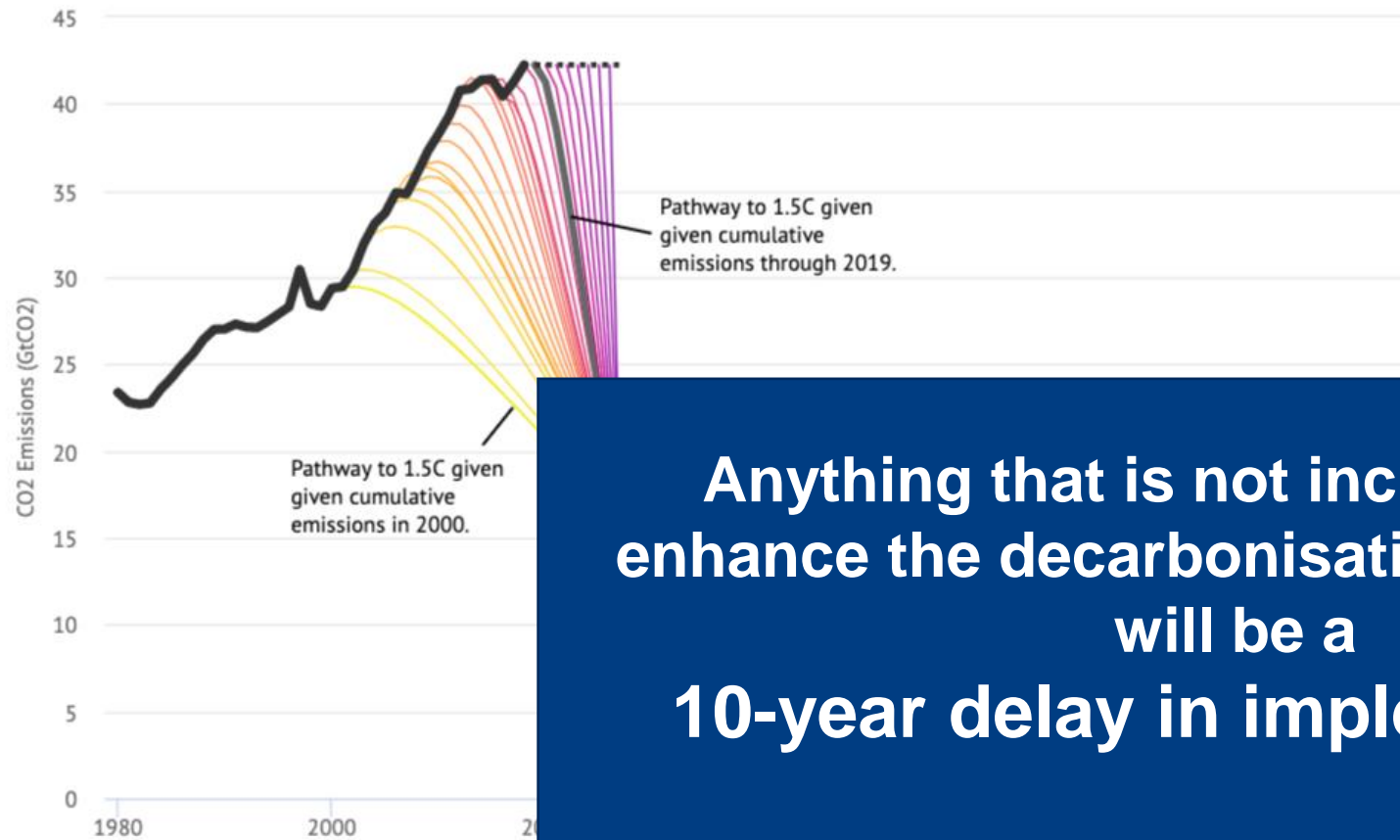
The role of Small and Medium Cities in promoting a decarbonised built environment

Gonzalo Sanchez

28 June 2022



Avoiding climate disaster is the goal



Anything that is not included now to enhance the decarbonisation of buildings will be a 10-year delay in implementation.



WLC - Embodied & Operational emissions

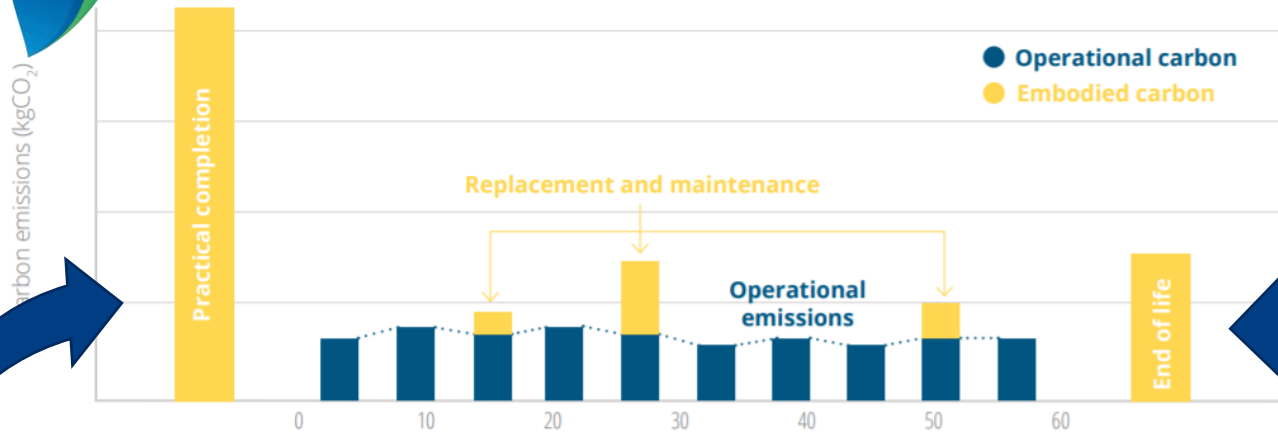
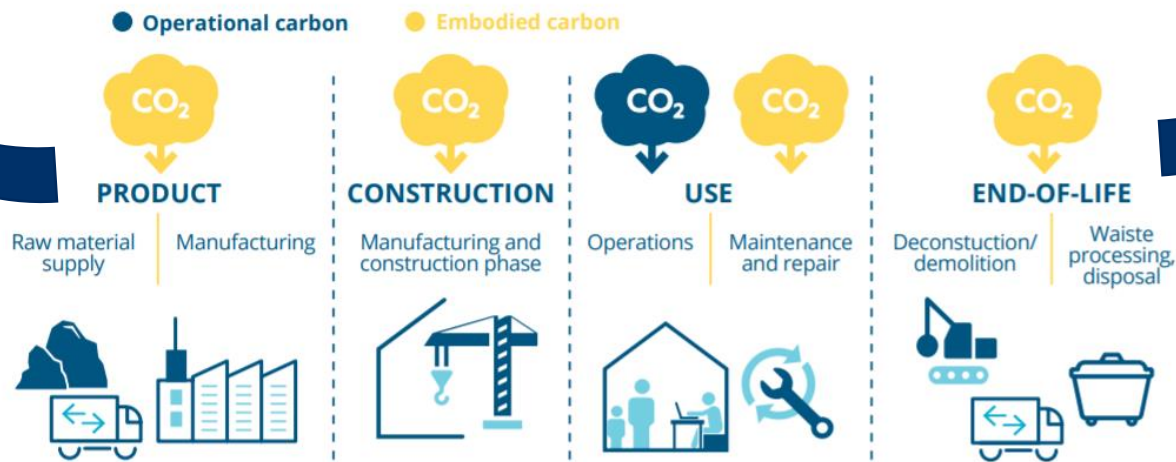


Figure 1: Embodied and operational carbon in a building's lifetime.



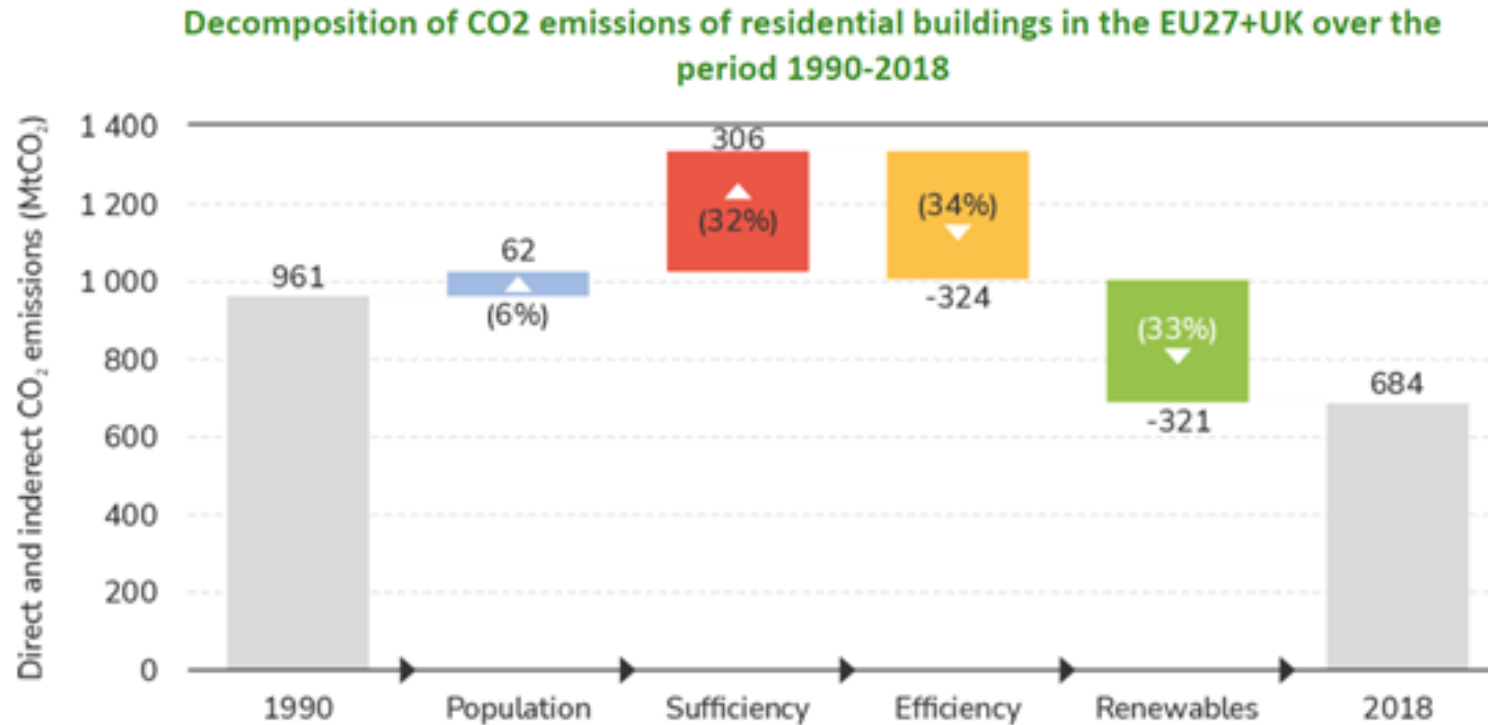
Building materials generate **250mt of CO2 annually in the EU +** other associated impacts

11% of global emissions are from embodied carbon of building materials

Source: BPIE. Diagrams from the Reports: *Whole-life Carbon: Challenges and solutions for highly efficient and climate-neutral buildings / Introducing Whole-life Carbon metrics: Recommendations for highly efficient and climate-neutral buildings*

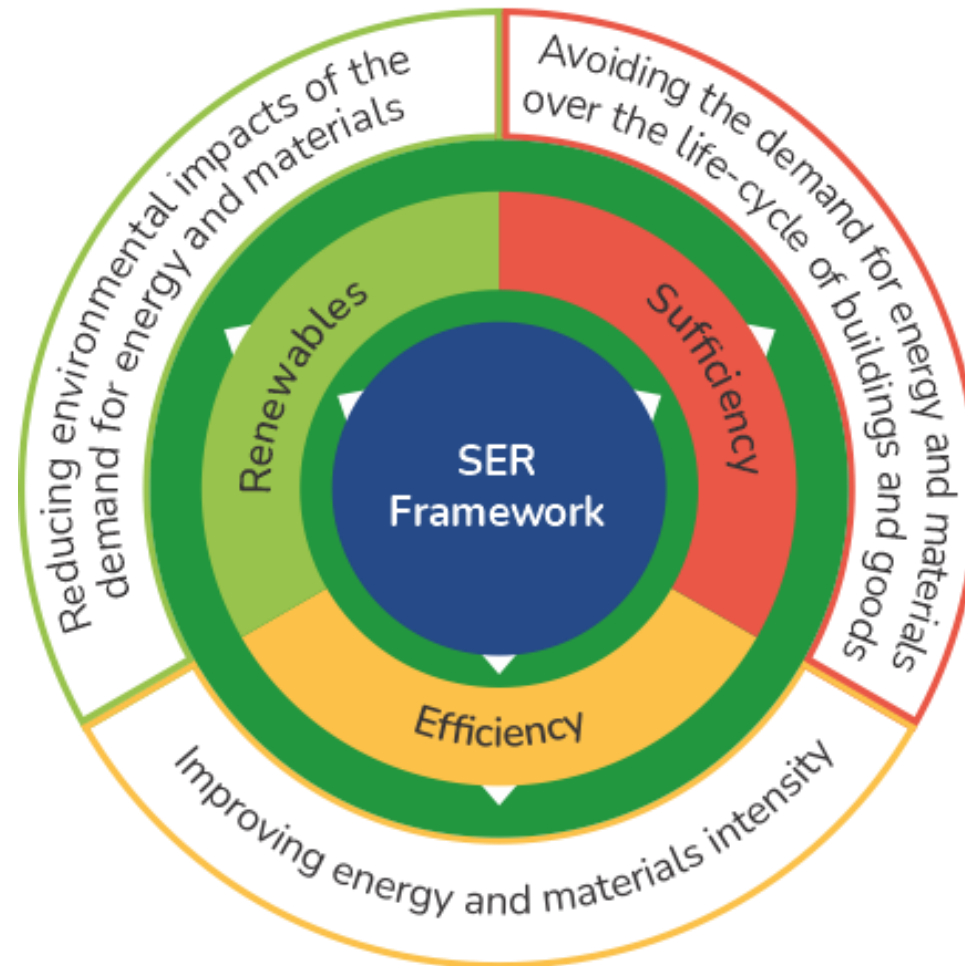


is the improvement of energy efficiency enough?

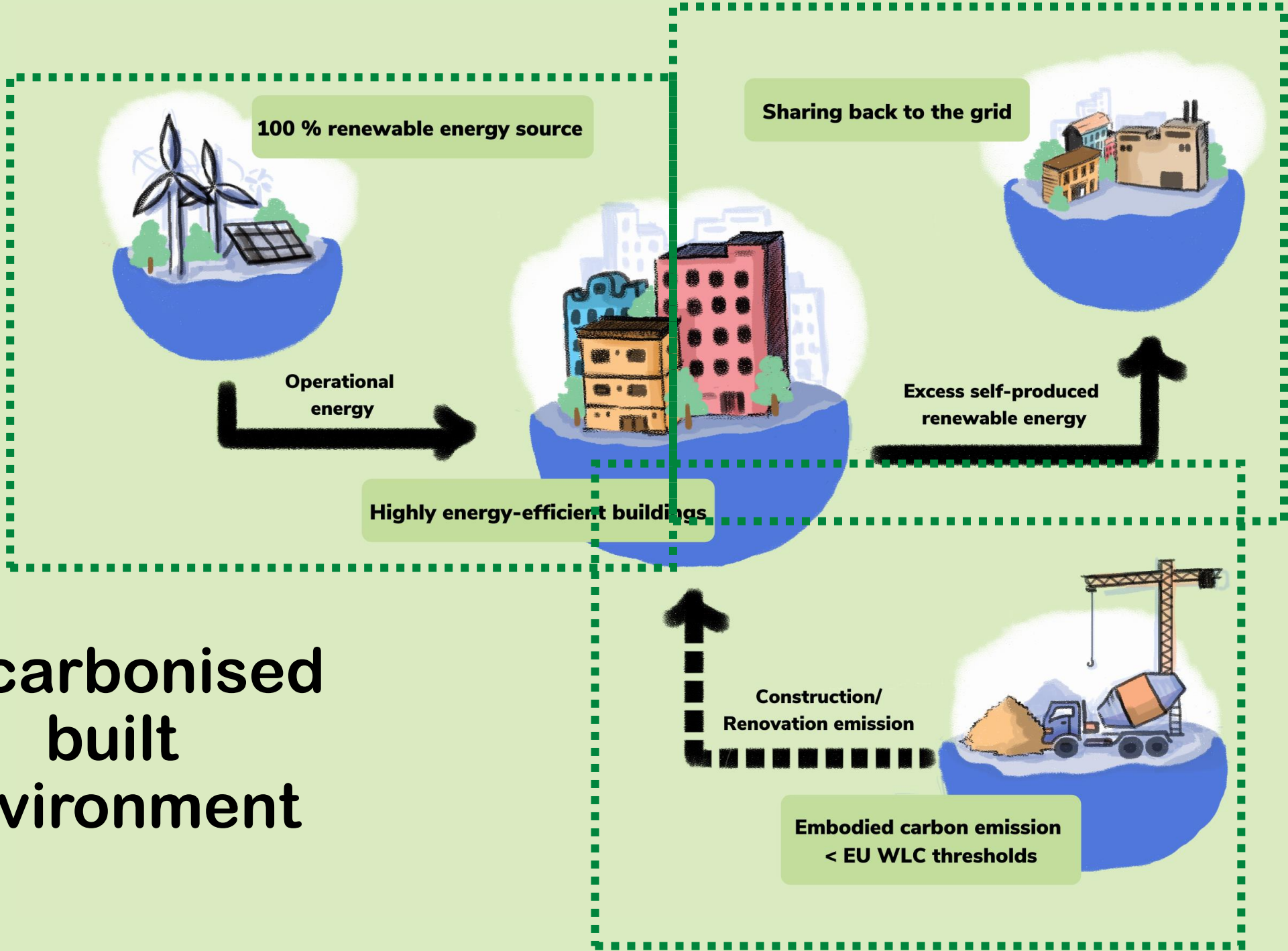


Source: Y. Saheb, *Sufficiency and Circularity. The two overlooked decarbonisation strategies in the 'Fit For 55' Package*. Editor: EEB 2021

Sufficiency + Efficiency + Renewables



Source: Y. Saheb, *Sufficiency and Circularity. The two overlooked decarbonisation strategies in the 'Fit For 55' Package*. Editor: EEB 2021



**Decarbonised
built
environment**



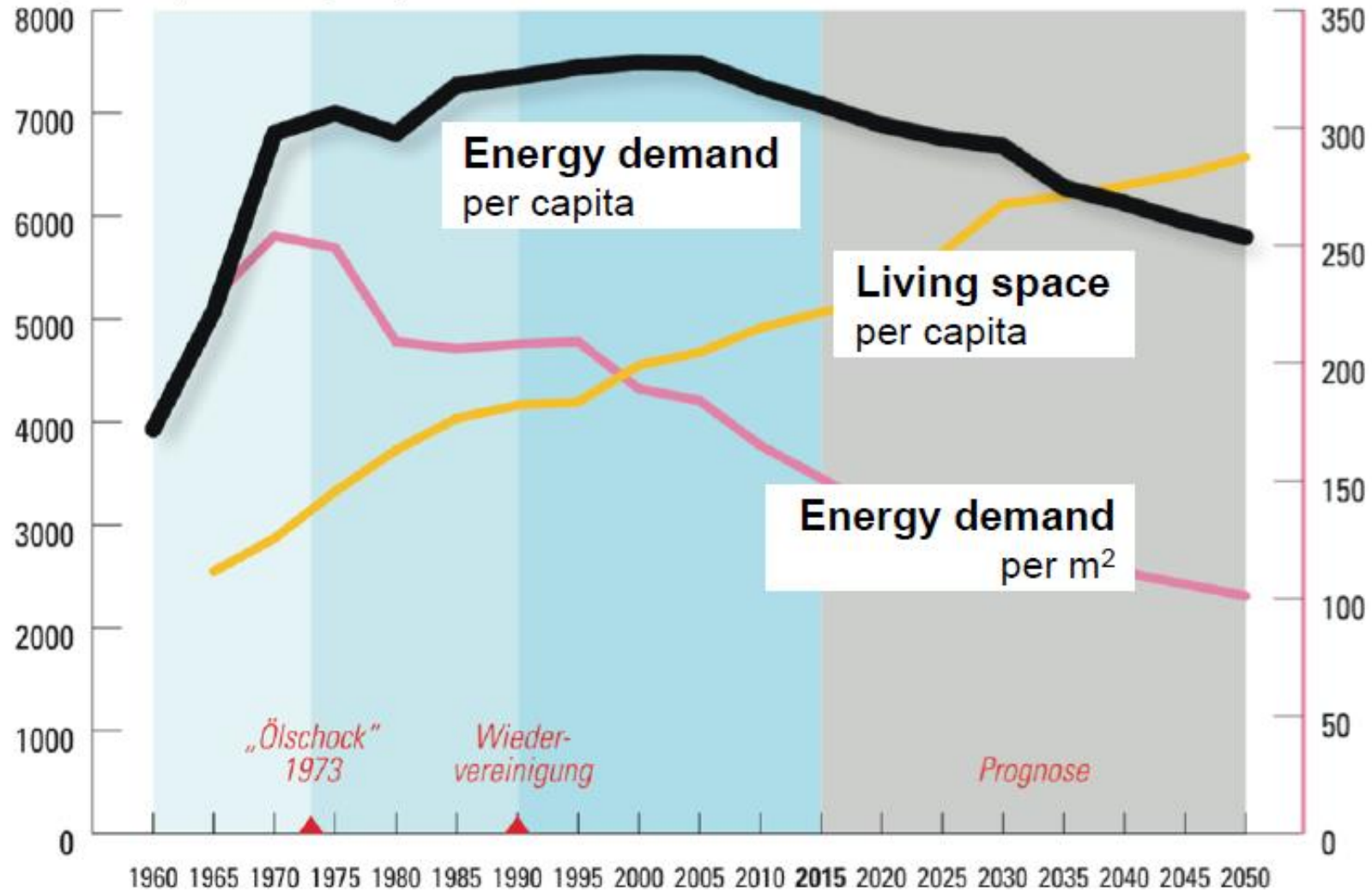
SUFFICIENCY





Energy demand for space heating (kWh per capita and year)

Energy demand per m² living space (kWh/a)





Optimising the use of buildings and appliances

Life time and use of buildings/appliances

Consumer policies

Sufficiency levers

Adjusting the size to the needs

Size of buildings/appliances

Housing and consumer policies

Fiscal and consumer policies

Ownership/ Usership

Pooling and re-purposing

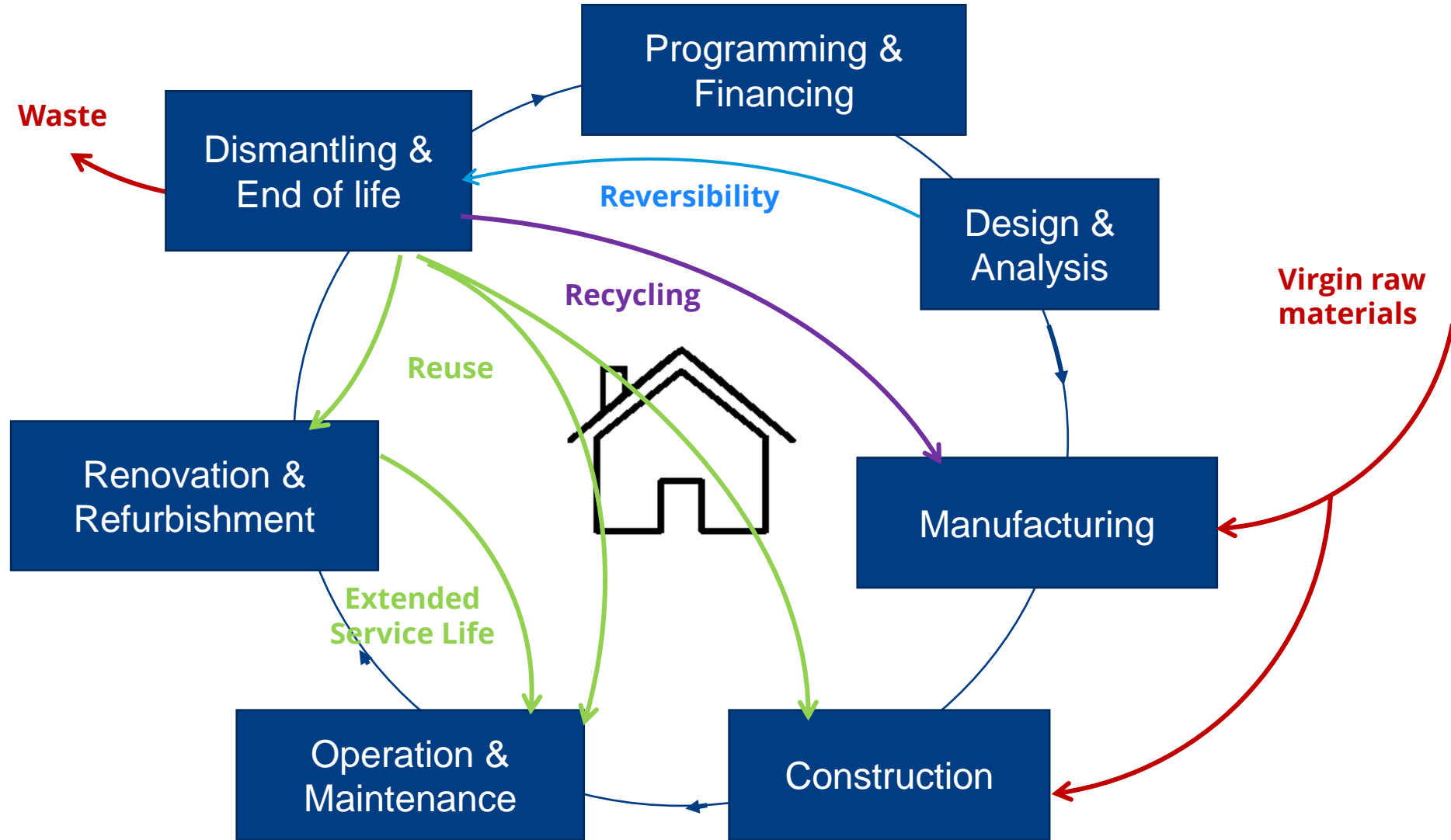
Land use/urban and fiscal policies

Multi-family buildings/
Single family homes

Organising the space

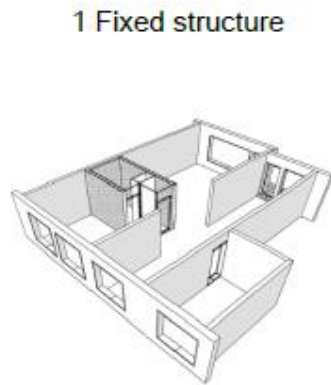
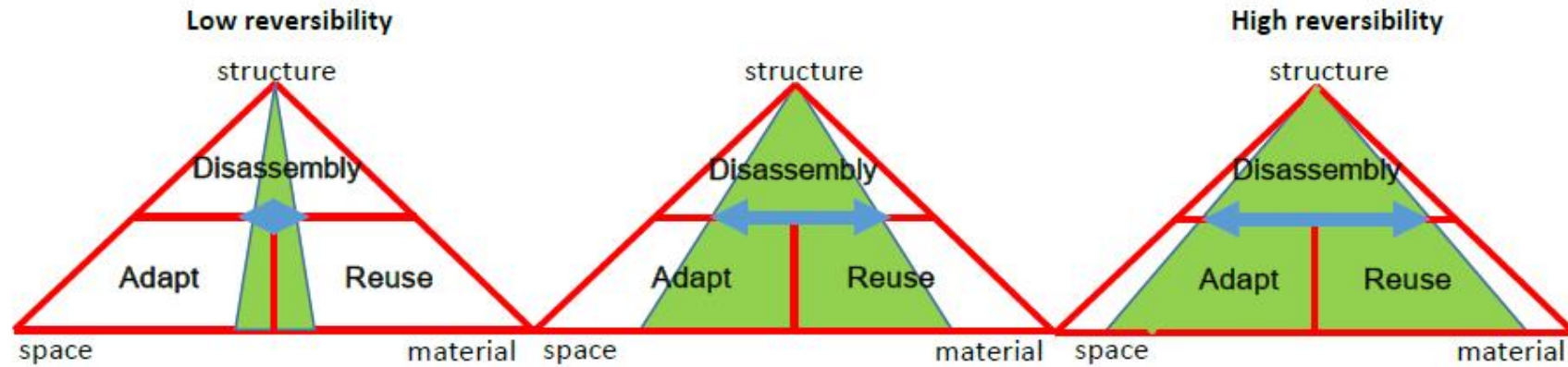


CIRCULAR ECONOMY

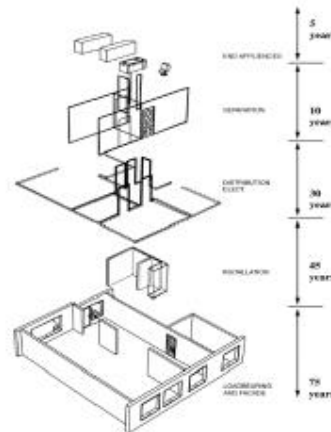




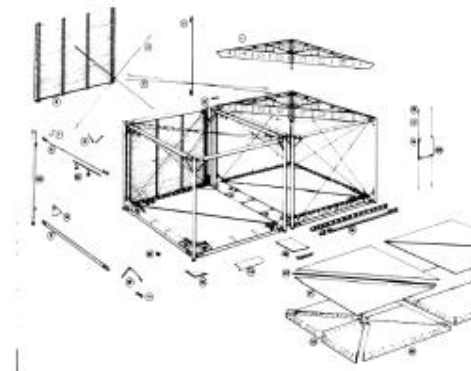
Reversibility, adaptability, reusing



2 Partly reversible



3 Reversible structure

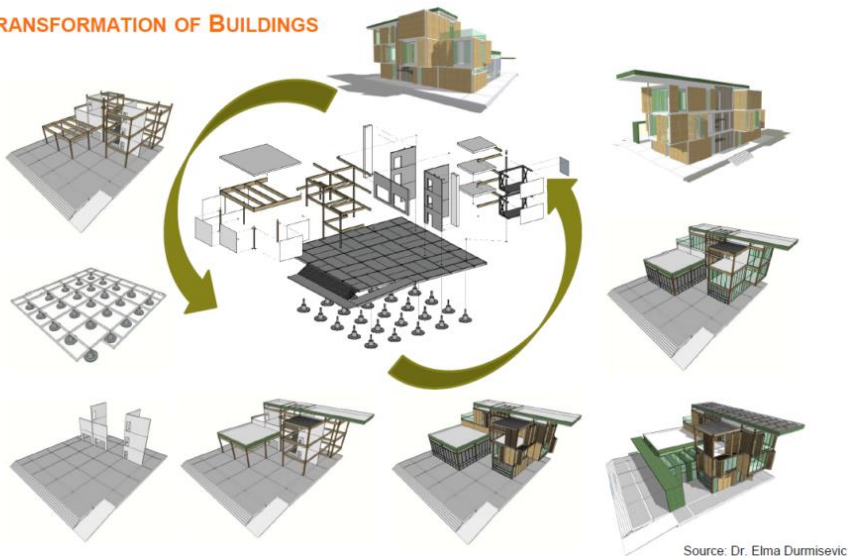




EU and local experiences

REVERSIBLE BUILDING DESIGN

REUSE AND TRANSFORMATION OF BUILDINGS



Source: Dr. Elma Durmisevic

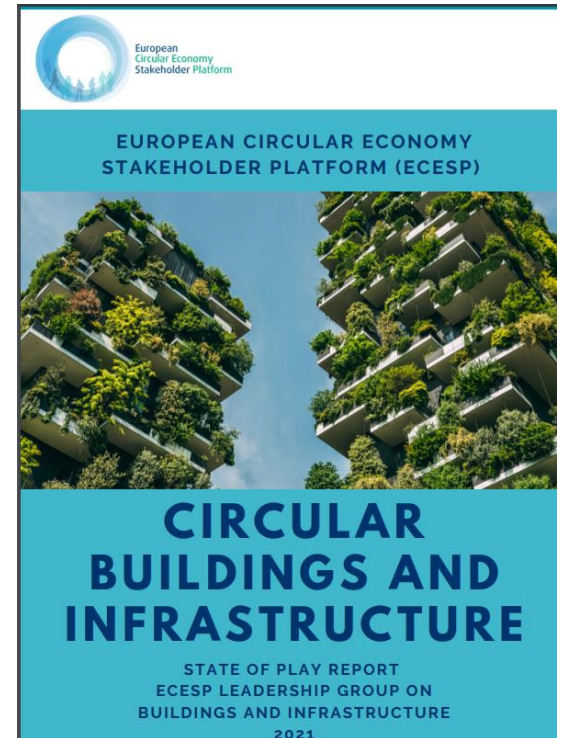
<https://www.bamb2020.eu/>

BAMB Project



<https://cityloops.eu/>

CityLoops



https://hollandcircularhotspot.nl/wp-content/uploads/2022/03/circular_buildings_and_infrastructure_brochure.pdf

European Circular Economy Stakeholder Platform



Clear policies

- requirements for the Member States to set specific national targets for 2030 of at least 15% for use of secondary materials in buildings by 2025



Circular targets? Circular market?

Eurostat data (2020) – EEA report (2018)

FIGURE 9.2 Trends in the circular material use rate, EU-28



Source: Eurostat (2019a).

Metal ores (gross ores): 25,3

Non-metallic minerals: 15,8

Biomass: 9,6

*15% of secondary
materials available*



EU Policy framework

Circularity are cross-cutting issues

CONSTRUCTION PRODUCT
REGULATION

ENERGY PERFORMANCE
BUILDING DIRECTIVE

WASTE FRAMEWORK
DIRECTIVE

creating the **norms**
and harmonising
info on products
placed on the
market

creating the **demand**
and the market for
low carbon
construction products

creating the **legal**
drivers and
economic
incentives to reuse
& recycle
construction
products



EU Policy framework

Circularity are cross-cutting issues

**CONSTRUCTION PRODUCT
REGULATION**

**ENERGY PERFORMANCE
BUILDING DIRECTIVE**

**WASTE FRAMEWORK
DIRECTIVE**

**Information
requirements**

(bill of materials)

**Minimum Performance
for circularity**

**Financial incentives
Proper market**

**Establishing benchmarks
for embodied emissions**

**Reversibility and
adaptability of buildings**

**Recycling/re-use rate for
construction products and
materials**

Prioritising renovations

Harmonised standards

Pre-demolition audits

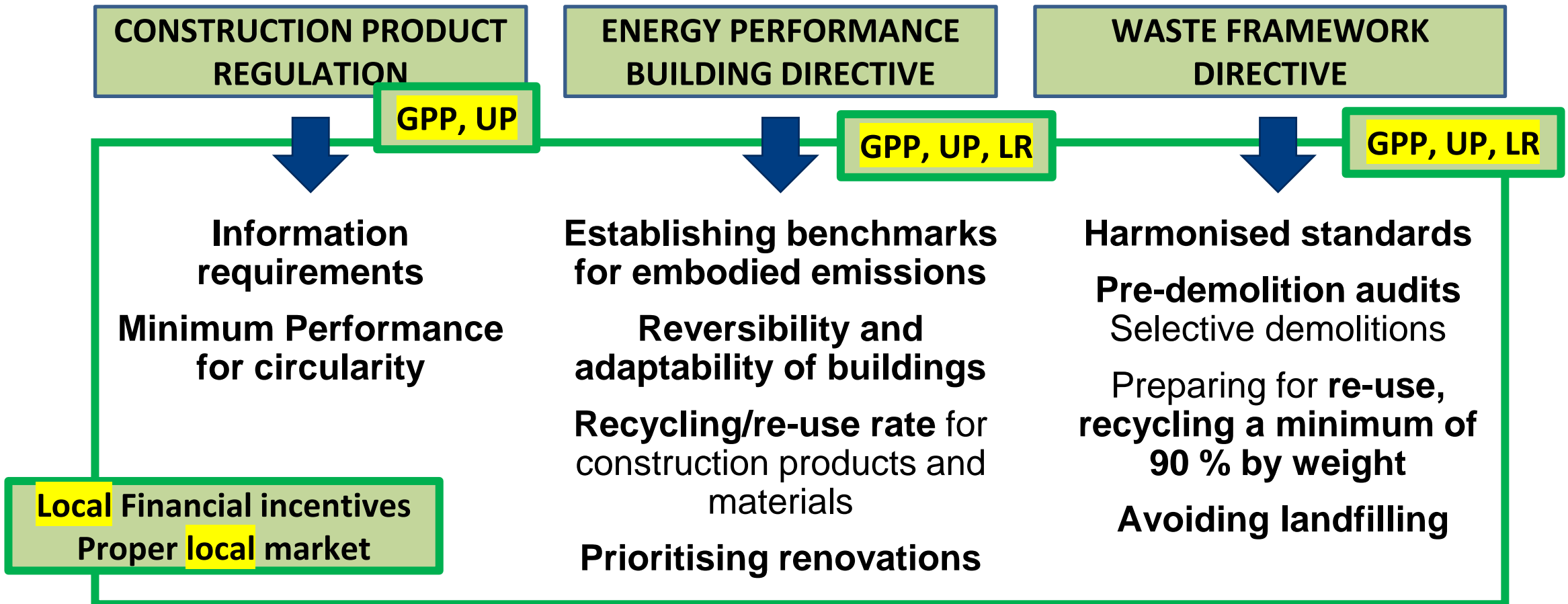
Selective demolitions

Preparing for re-use,
**recycling a minimum of
90 % by weight**

Avoiding landfilling

Local policies: Green Public Procurement, Urban Planning, local incentives, local regulations

Circularity are cross-cutting issues





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Thanks for listening!

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