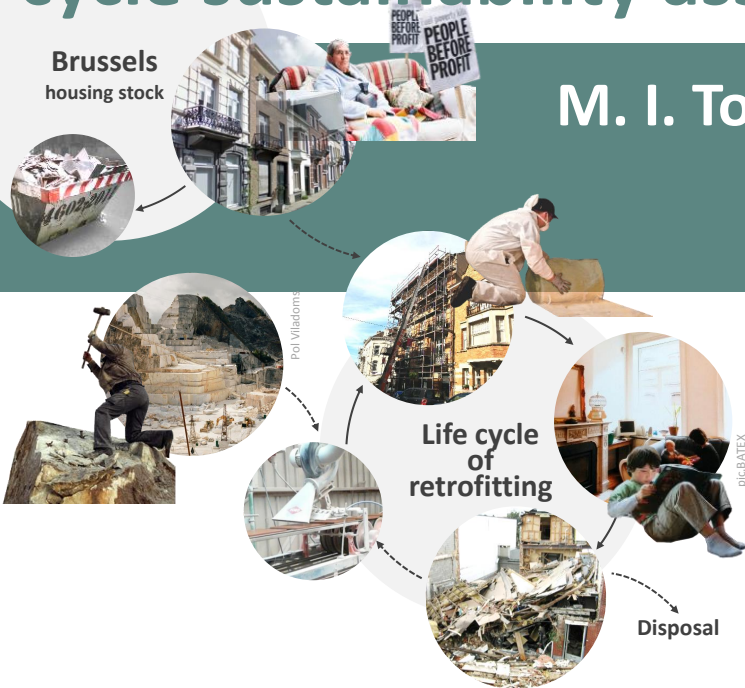


# Implementation of socioeconomic criteria for the life cycle sustainability assessment of housing retrofitting

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LCBUILD PROJECT



4th International seminar in social LCA  
20<sup>th</sup> November 2014 – Montpellier, France

## Environmental targets

- Energy performance
- *avoiding repercussions (health, social inequalities)*



## Housing stock

- Improve housing conditions
- *keeping cultural heritage*

## Construction sector

- Boost activity, create employment
- *ensuring fair working conditions*

## Population & households

- Housing demand
- Fuel poverty
- *identifying priorities*

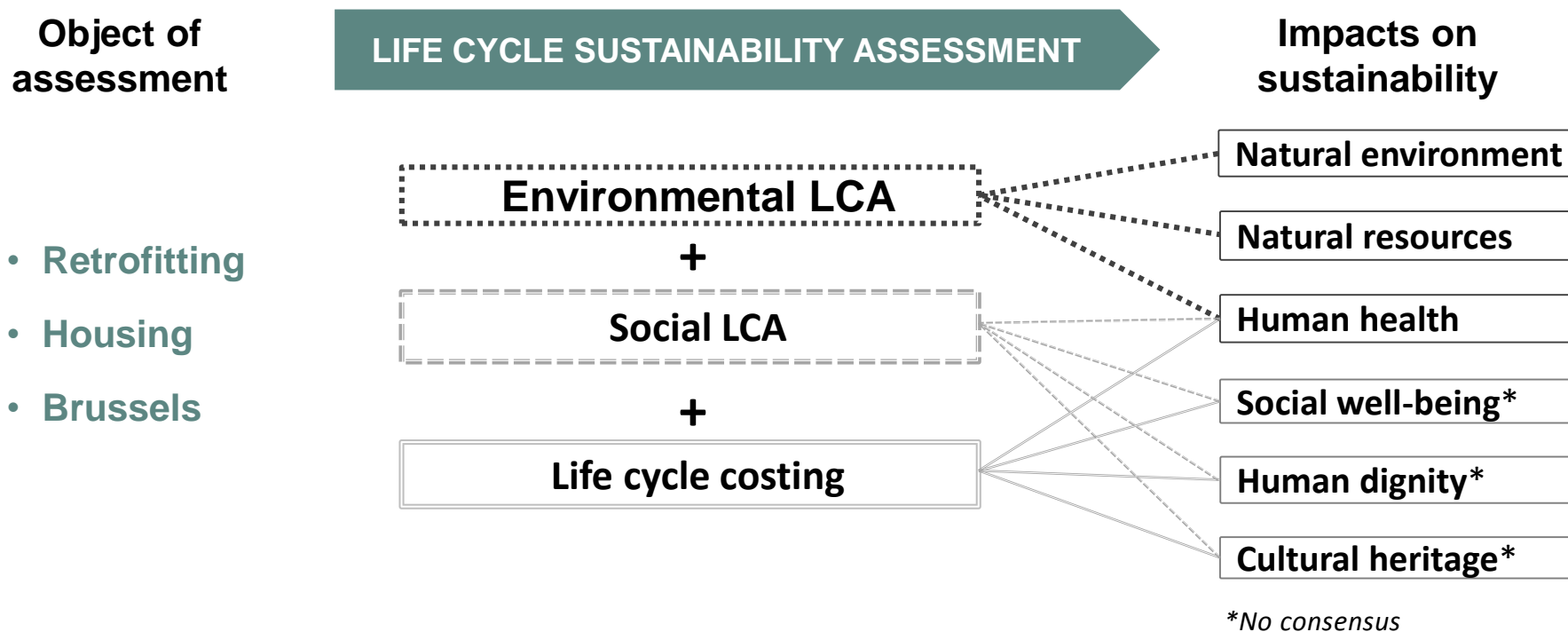
- Increase retrofitting
- *improving practices*

- **Need of public incentives**

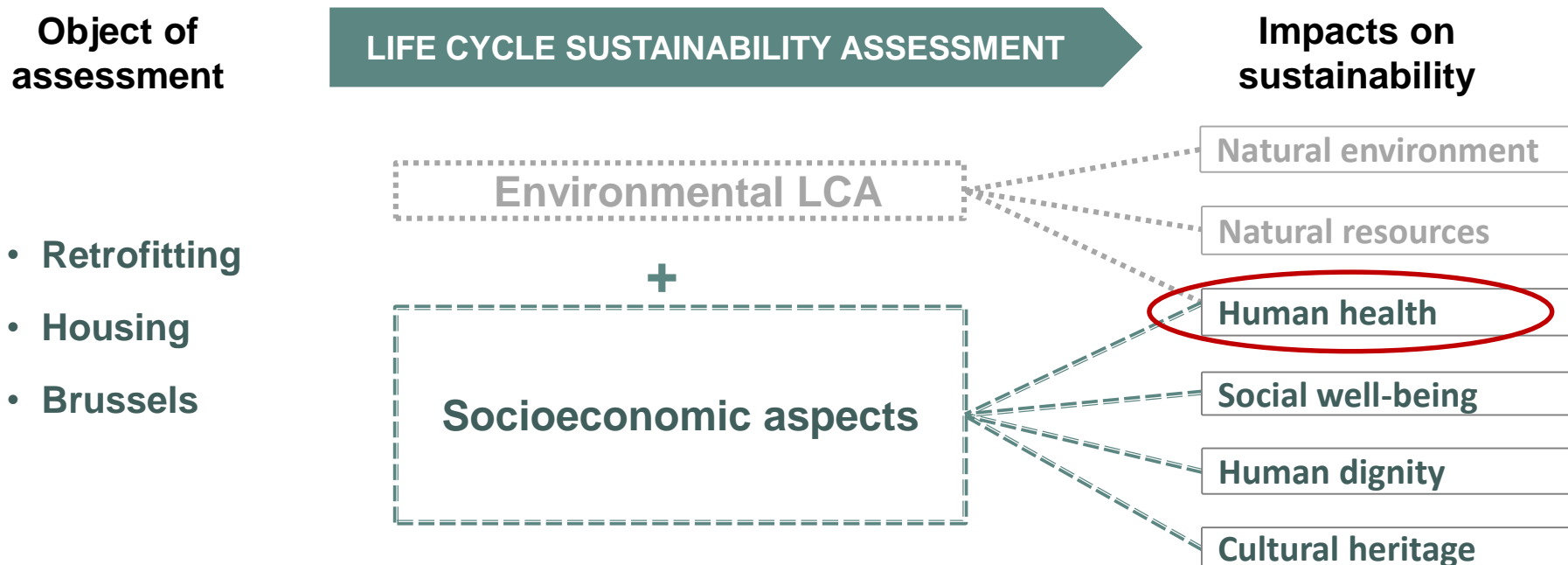
***LCSA as a tool for decision-making?***



“**LCBuild** aims (...) to assist **decision making** in the **Brussels-Capital Region** towards more sustainable practices in housing retrofitting, **from a life cycle perspective**”



“**LCBuild** aims (...) to assist **decision making** in the **Brussels-Capital Region** towards more sustainable practices in housing retrofitting, **from a life cycle perspective**”



Object of assessment

Inventory indicators



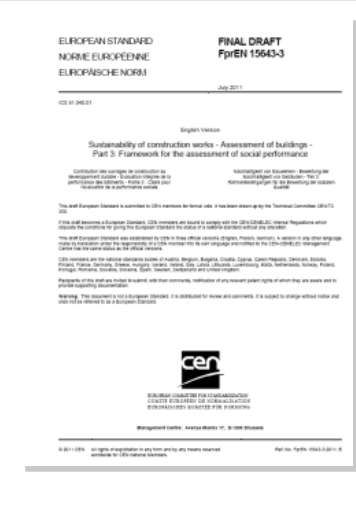
Midpoint impacts



Endpoint impacts

Impacts on sustainability

- CEN standards for the **social LCA of buildings**
  - **EN 15643-3:2012 – framework**
  - **EN 16309:2014 – methods**
- ✗ **Social performance** categories
- ✗ **Only use phase**
- ✓ **Suitable baseline** to complete



**Indicators, aspects, measures**

**Thermal characteristics**

- operative temperature
- humidity
- air velocity and distribution

**Charact. of indoor air quality**

- concentration of substances
- radiation
- ventilation rate

**Social performance categories**

- Accessibility
- Adaptability
- Health and comfort**
- Safety and security
- Maintenance
- Loadings on the neighbourhood
- Stakeholder involvement\*
- Responsible sourcing\*

*\*Potential further development*



Object of  
assessment

Inventory  
indicators



Midpoint  
impacts



Endpoint  
impacts

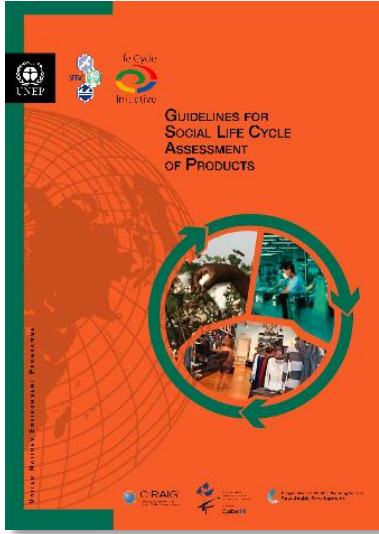
Impacts on  
sustainability

- UNEP/SETAC guidelines **social LCA of products**

✗ Not **building-specific**

✗ Indicators **too global**

✓ **Complement EN 16309**



Stakeholder categories	Impact categories	Subcategories	Inv. indicators	Inventory data
Workers	Human rights	Child Labour		
Local community	Working conditions			
Society	Health and safety			
Consumers	Cultural heritage			
Value chain actors	Governance			
	Socio-economic repercussions			



Object of  
assessment

Inventory  
indicators



Midpoint  
impacts



Endpoint  
impacts

Impacts on  
sustainability

- **Other methodologies** for sustainability assessment of buildings



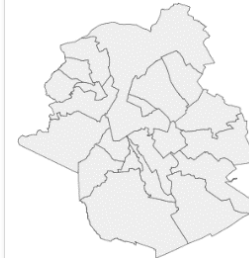
- ✓ Increasingly including **social aspects**
- ✗ Not from a **LC perspective**



## I. To define **indicators** for the **life cycle inventory assessment (LCI)**

**MAIN SOURCES**  
transferred, adapted

- CEN standards: **social LCA of buildings**
- UNEP/SETAC guidelines: **social LCA of products**
- **Other methodologies** (building assessment)



Unemployment  
Social dumping  
Fuel poverty  
Affordability  
(...)

**CONTEXT**  
own elaboration

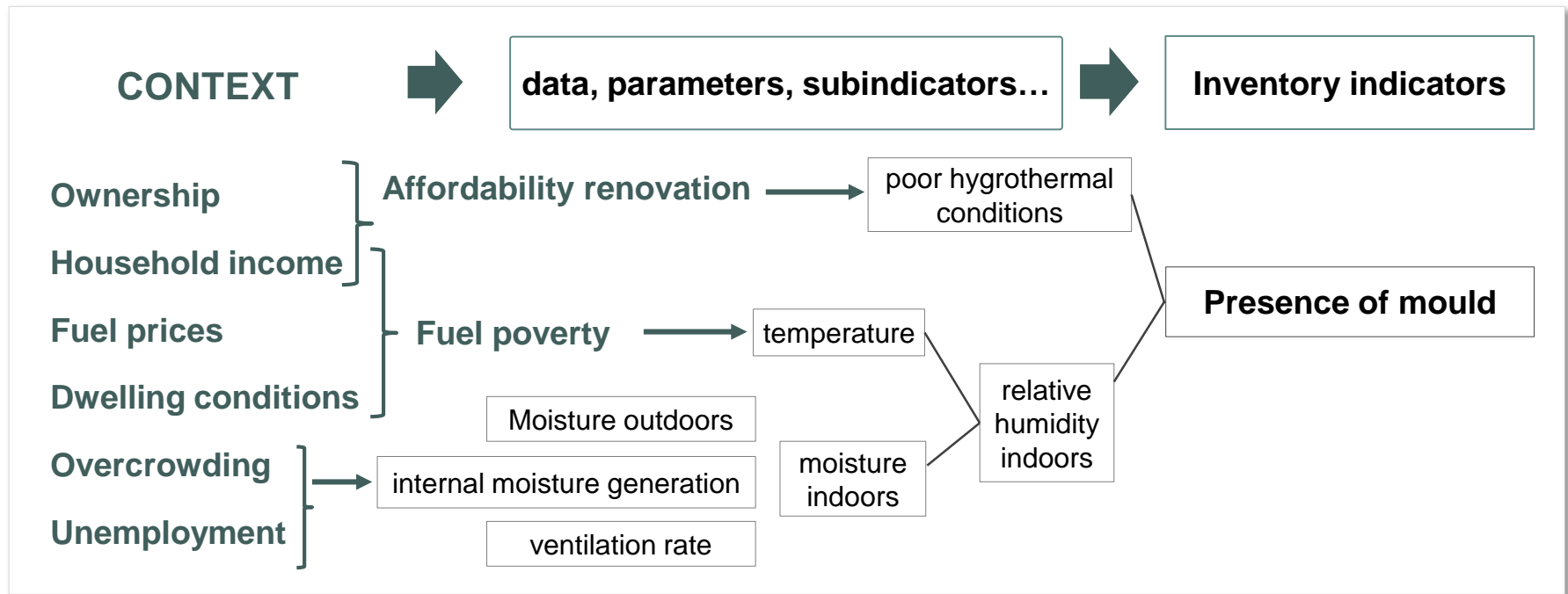
- ✗ None covers the **complete life cycle**
- ✗ **Indicators** are **not specific** (Brussels, retrofitting, housing)
- ✗ None proposes **calculation methods**

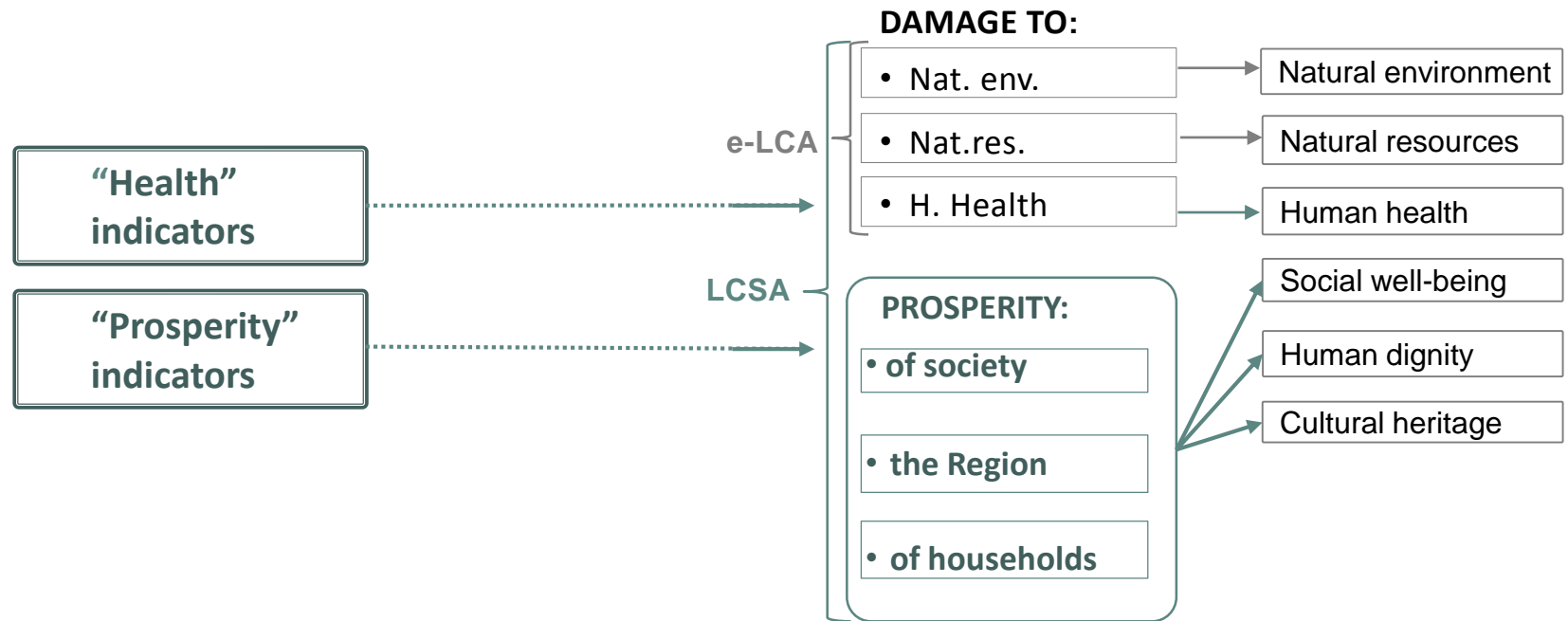
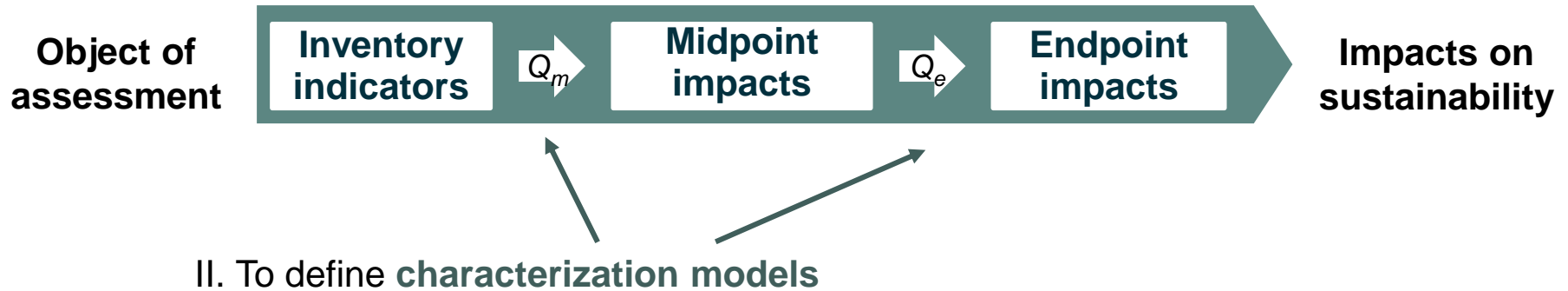


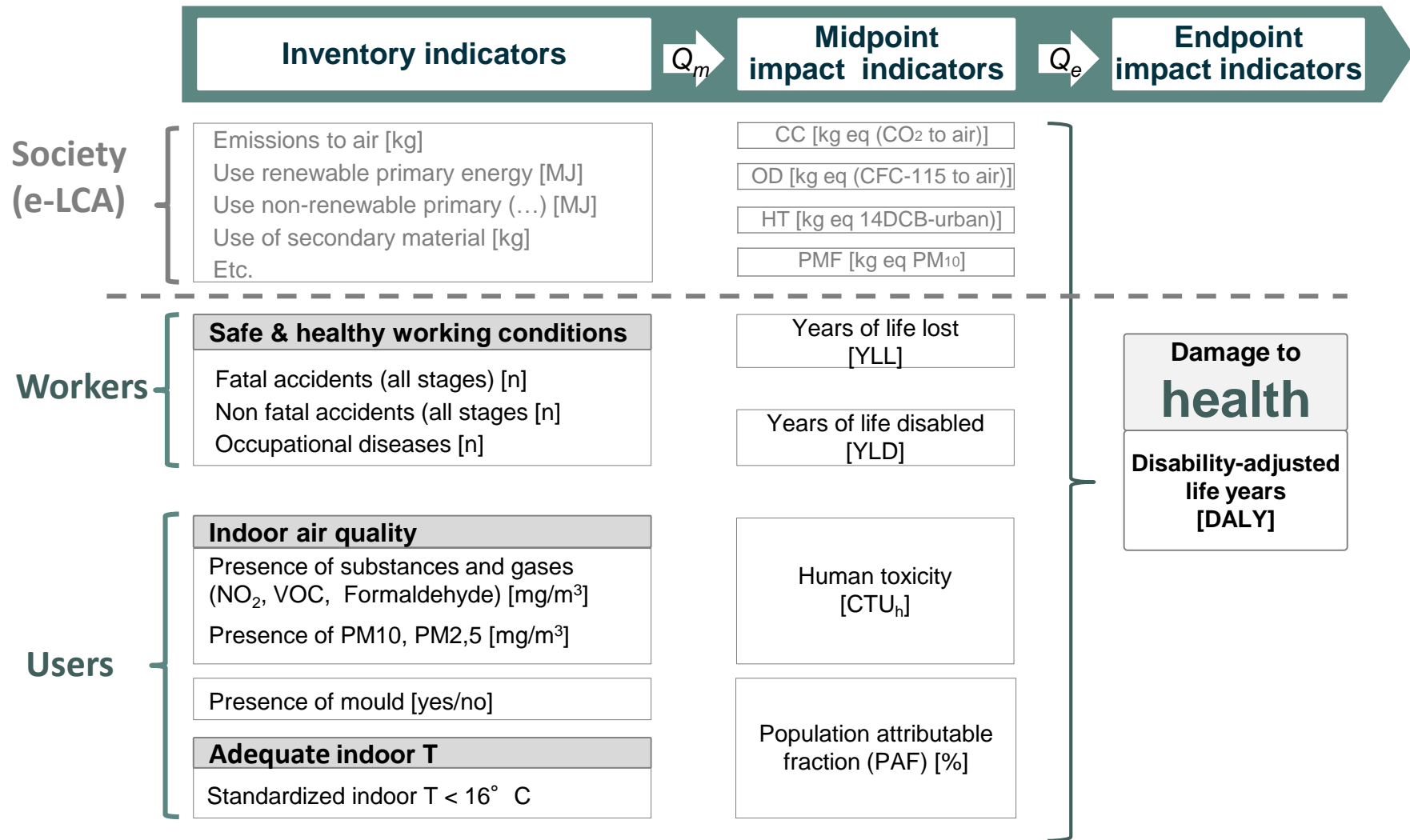


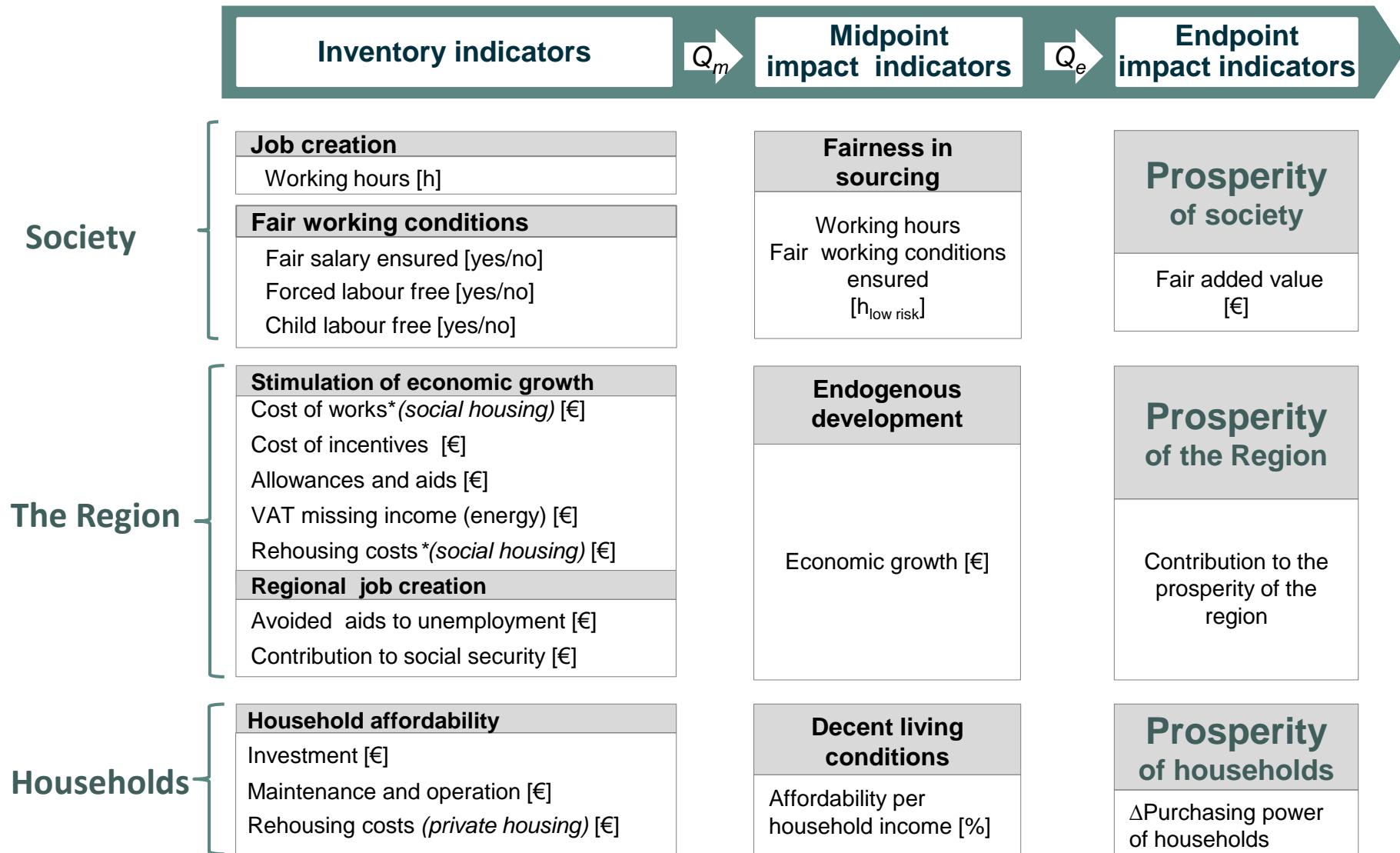


I. To define **indicators** for the **life cycle inventory assessment (LCI)**









- “Quantify changes in health and prosperity due to renovation...”



**Maison bruxelloise 2F**

**Built before 1918**

**Private - owner**

**Household income > Q75**

**Retrofitting works (Low energy)**

Insulation

Double window frame/triple glazing

Roof: Foam+ EPDM

Ventilation double flow - heat recovery

Solar panels (4,8m<sup>2</sup>)



Damage to natural environment  
Damage to natural resources  
Damage to human health  
Prosperity of society  
Prosperity of the Region  
Prosperity of households

## Housing stock



## Relevant scenarios

- Ownership
- Household income
- Occupancy patterns
- (...)



## Decision-making

- To identify priorities for intervention
- To identify strategies to enhance
- To optimize incentive instruments



- **Several relevant social issues are missing**
- **This approach addressed a specific need in a particular context  
...in a limited time**
- **Application of LCSA as a “synthesis” tool**
  - To be fed by further developments
  - To be fed by appropriate and various data
  - Not exclusive of other methods, tools, processes



# Questions & discussion

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