

RESOURCE  
ACQUISITION

MANUFACTURE

PACKAGING AND  
TRANSPORTATION

USE

END-OF-LIFE



## Round Table Discussion: “Comparative Analysis: choosing the appropriate reference”



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# AMANAC – CSA LCA Workshop Round-table Discussion



## Introduction

- Cycleco is a French company specialized in LCA
- Cycleco is the leader of the WP LCA within the H-House project (HHO)
- HHO aims at developing innovative materials and components for building walls:
  - Sustainable in a life cycle perspective
  - Not harmful, or even beneficial, for human health



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## Definition of the reference scenario

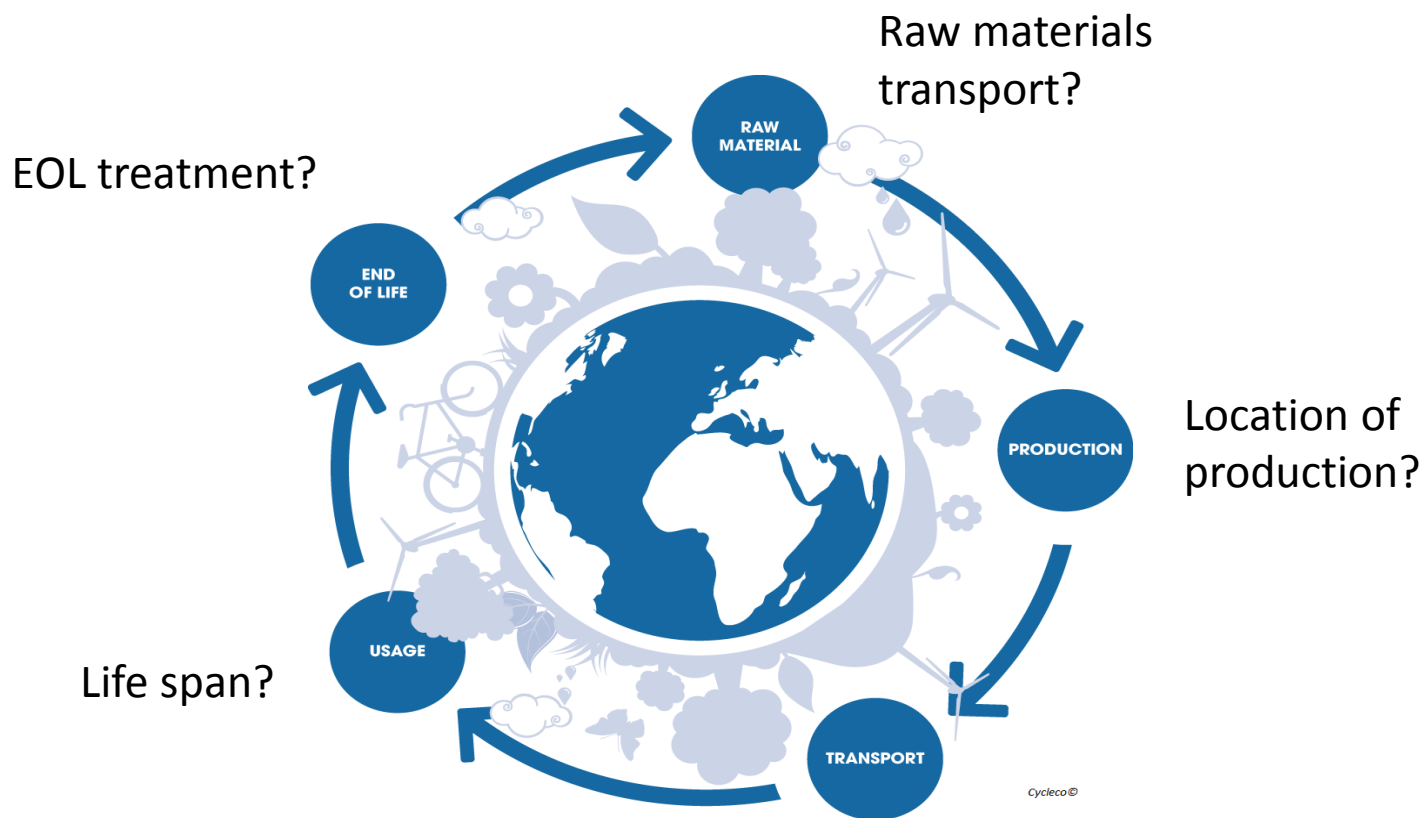
- Crucial for impact saving estimation
- Key issue of the reference scenario definition:
  - Definition of a life cycle scenario
  - Reference basis: available technologies or state of the art?
  - A same reference for LCA and for LCC?
  - Data provider



## HHO components

- Walls for building:
  - Internal partitions
  - ➔ • External precasted walls made of lightweight concrete,  $U=0,15W/m^2.K$ :
    - Loadbearing
    - Non-loadbearing

## Definition of a life cycle scenario





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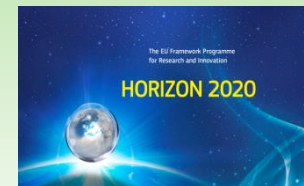


## Life cycle scenario for the HHO component and the reference wall

	HHO components	Reference wall
Raw materials transport	<del>Specific data of the developer</del> Statistical data (ecoinvent assumptions)	Statistical data (ecoinvent assumptions)
Location of production	Sweden and Germany (2 studies)	Idem as HHO products
Location of use and associated transport	200km of location of production	Idem as HHO products
Life span	100 years	Idem as HHO products
EOL treatment	Nowadays common practices	Idem as HHO products



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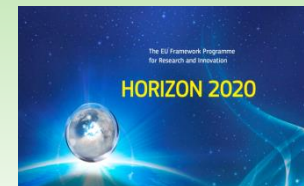


## Reference basis: existing technologies or state of the art?

1. U value of the reference wall:
  - 0,15, as the H-House components, or state of art (0,2 – 0,4)?
2. Design:
  - Concrete or wood-framed? Design details?
3. Installation mode:
  - Concrete wall made on site or precast wall?



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## A same reference for LCA and for LCC?

- Interest of LCA according to the HHO partners: embodied impact comparison
- Interest of LCC according to the HHO partners: payback time





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## Resolution

- Design & installation mode: state of art in the chosen locations
- Thermal performance:
  - State of art for LCC: 0,2 – 0,4 W/m<sup>2</sup>.K
  - Existing technologies for LCA: 0,15 W/m<sup>2</sup>.K

	HHO components	Reference wall
Functional unit A	Comparison of loadbearing external walls	
Study 1: Berlin	1. TRC-FC-TRC	On-site SRC+ insulation
Study 2: Stockholm	1. TRC-FC-TRC	Precast concrete wall
Functional unit B	Comparison of non-loadbearing external walls	
Study 1: Berlin	1. UHPC-FC 2. UHPC-AAC	Cladding
Study 2: Stockholm	1. UHPC-FC 2. UHPC-AAC	Curtain wall



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## Data provider

- A good balance between a specific and a generic product :

	HHO products	Reference product
Manufacturing of PM	ecoinvent	ecoinvent
Transport of PM	ecoinvent (market mix)	ecoinvent (market mix)
Manufacturing of materials	HHO partners	ecoinvent
Manufacturing of components	HHO partners	HHO partners & scientific publications
Transport of materials or components	HHO partners	ecoinvent (market mix)
Maintenance needs	Scientific publications	Scientific publications
End of life	Scientific publications	Scientific publications



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## Support to make choices

1. Standards (EN 15804) and/or Best practices guidelines (ILCD Handbook) and/or Scientific literature
2. Other public sources: statistics, public or private organization websites...
3. Justified arbitrary choice:
  - LCA should reflect reality rather than theory
  - Make consistent choices for both scenarios, innovative components and reference
  - Make the choice that not favor the product of your interest



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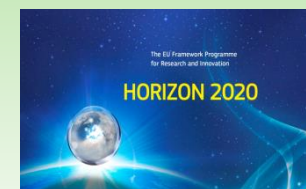


## Open Issues – Let's discuss this further!

- Similar/additional problems in your project?
  - How was it solved?
  - Methodology used, helpful sources,...?
  - Do you agree with the following recommendations:
    - LCA should reflect reality rather than theory
    - Make consistent choice for both scenarios, innovative components and reference
    - Make the choice that not favor the product of your interest
- Characteristics of reference case
  - Criteria: name a few...
  - Criteria ranking: which is more important?
  - Quality vs Quantity?
- Tackling new/advanced materials
  - Vs Conventional cases or...?
  - Using similar cases from other projects?
  - Would a database/deliverable from project's activities be helpful?



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## Project partners

H-HOUSE is a research project with a budget near to 6,5 millions of Euro, co-funded for about 4,75 million of Euro by the European Commission under the 7th Framework Programme (2007–2013).

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