



Towards a new generation of building LCA tools adapted to the building design process and to the user needs?

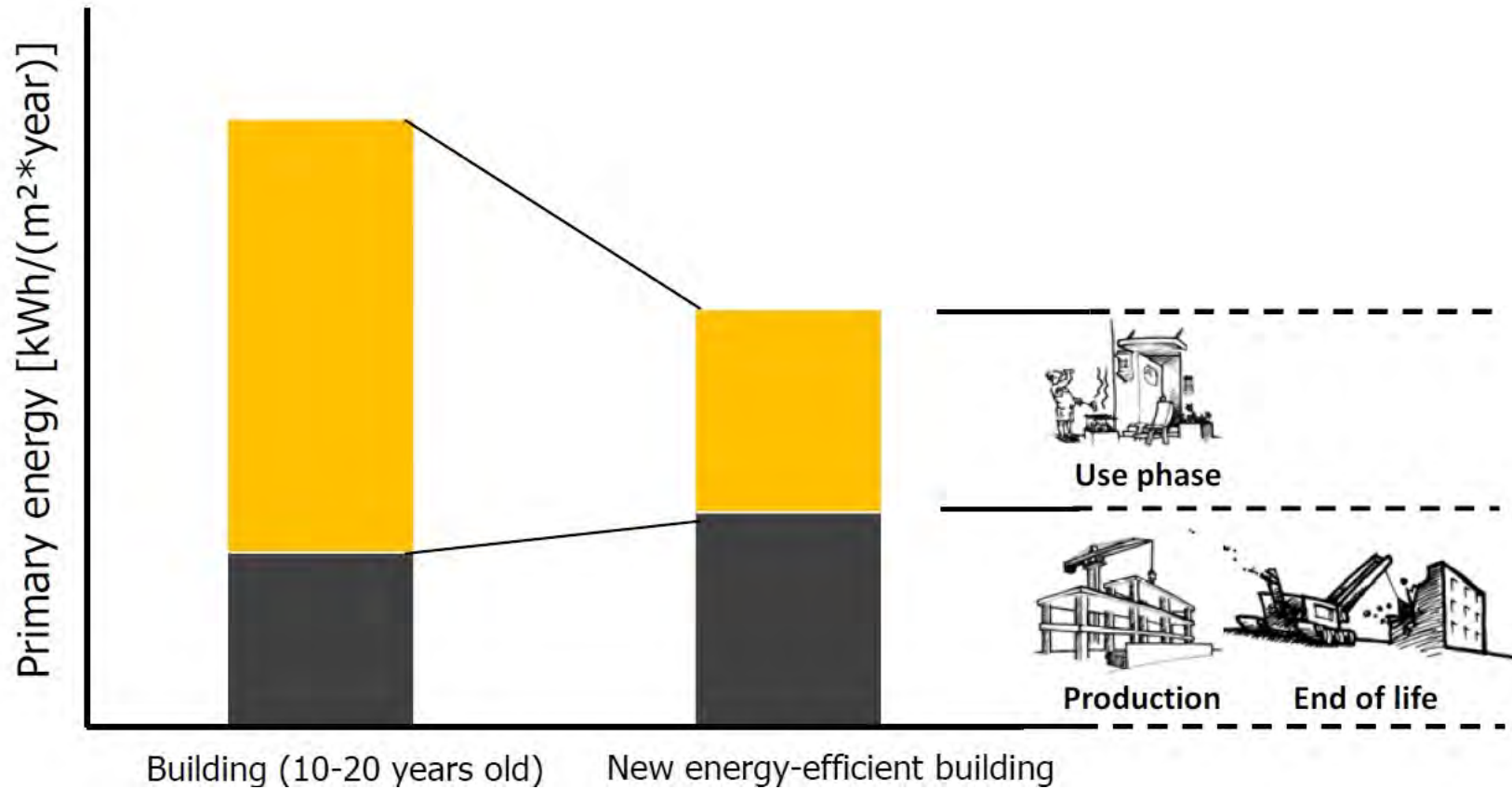
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Overview

- Introduction
- Integrated framework for building LCA
- Approach: use of 3 study types
- Conclusions and future steps

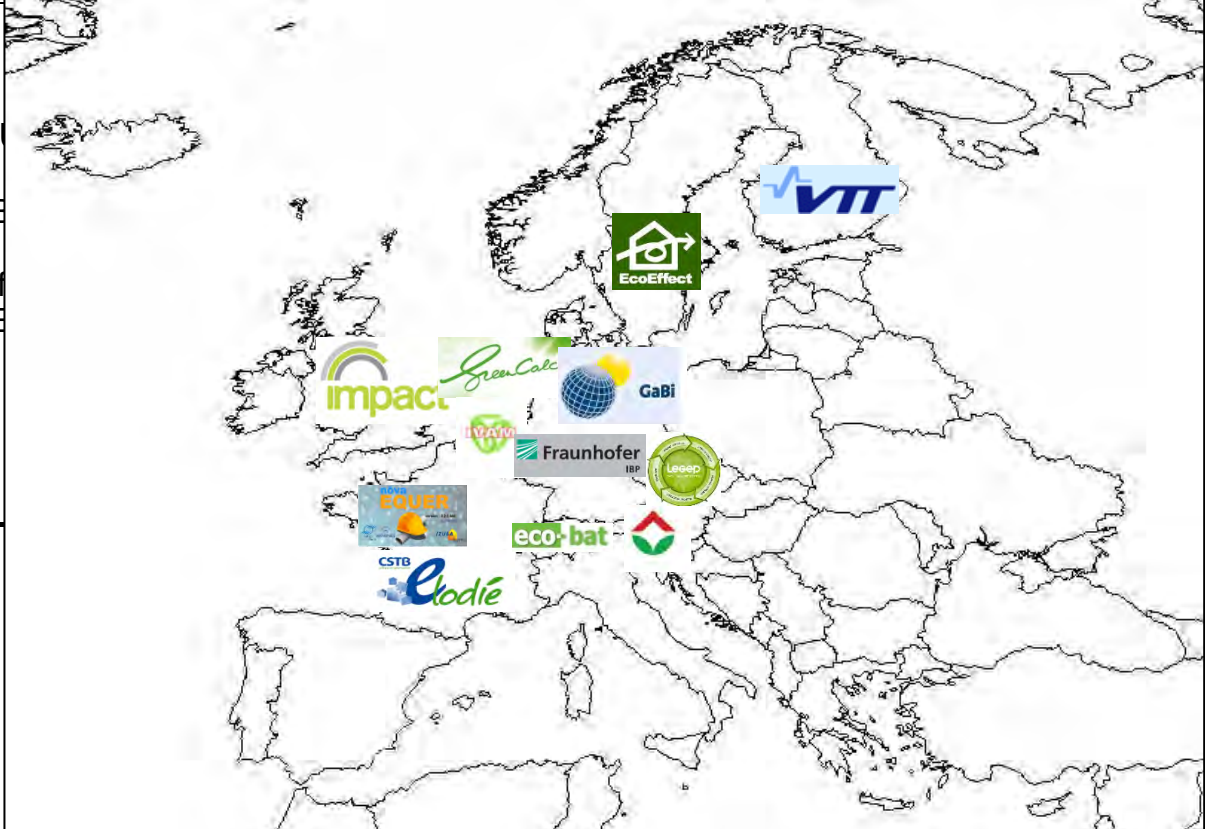
Introduction

Why developing building Life Cycle Assessment software?



Introduction

Review of existing LCA tools for buildings in Europe

N°	Building LCA tools	Country of development	Developer	Website
1	ECOSOFT	Austria	IBO	
2	BeCOST	Finland	VTT	
3	ELODIE	France	CSTB	
4	EQUER	France	ARMINES-IZI	
5	GaBi Build IT	Germany	PE Int	
6	SBS	Germany	Fraunhofer IBP	
7	LEGEP	Germany	WEKA	
8	ECOEFFECT	Sweden	KTH / Univ of	
9	ECO-BAU	Switzerland	HEIG VD / LB	
10	ECO-QUANTUM	The Netherlands	IVAM	
11	GreenCalc+	The Netherlands	Dutch GBC	
12	IMPACT*	UK	BRE	

Introduction

Objective of the study

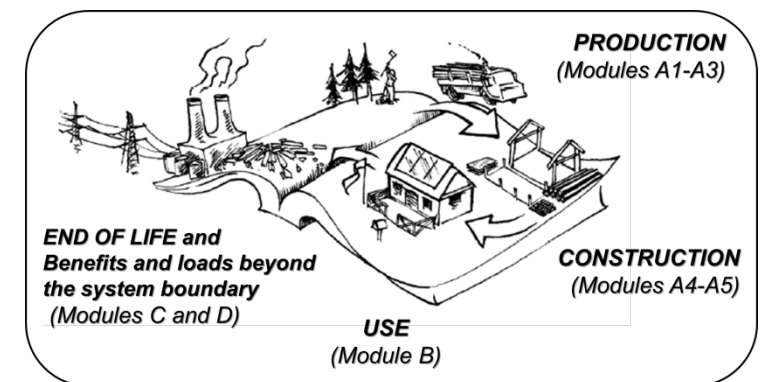
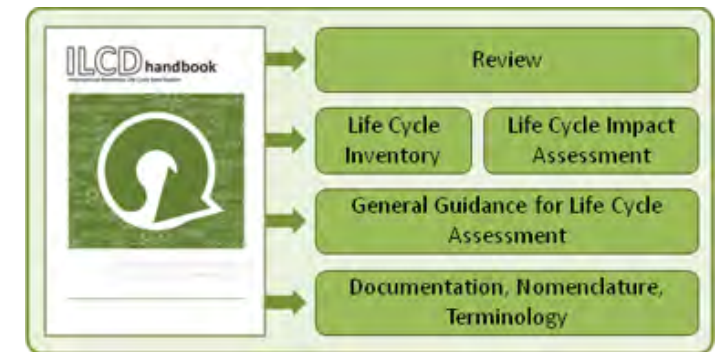
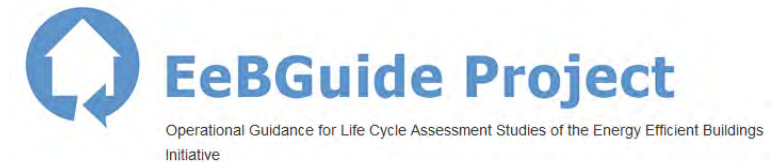
Integrate the existing body of knowledge for building LCA tools (ISO 14040, EN 15804, EN 15978, ILCD Handbook) in a consistent way

Develop adapted rules for building LCA tools depending on




- building stakeholders
- project stages

Integrated framework for building LCA tools (1)

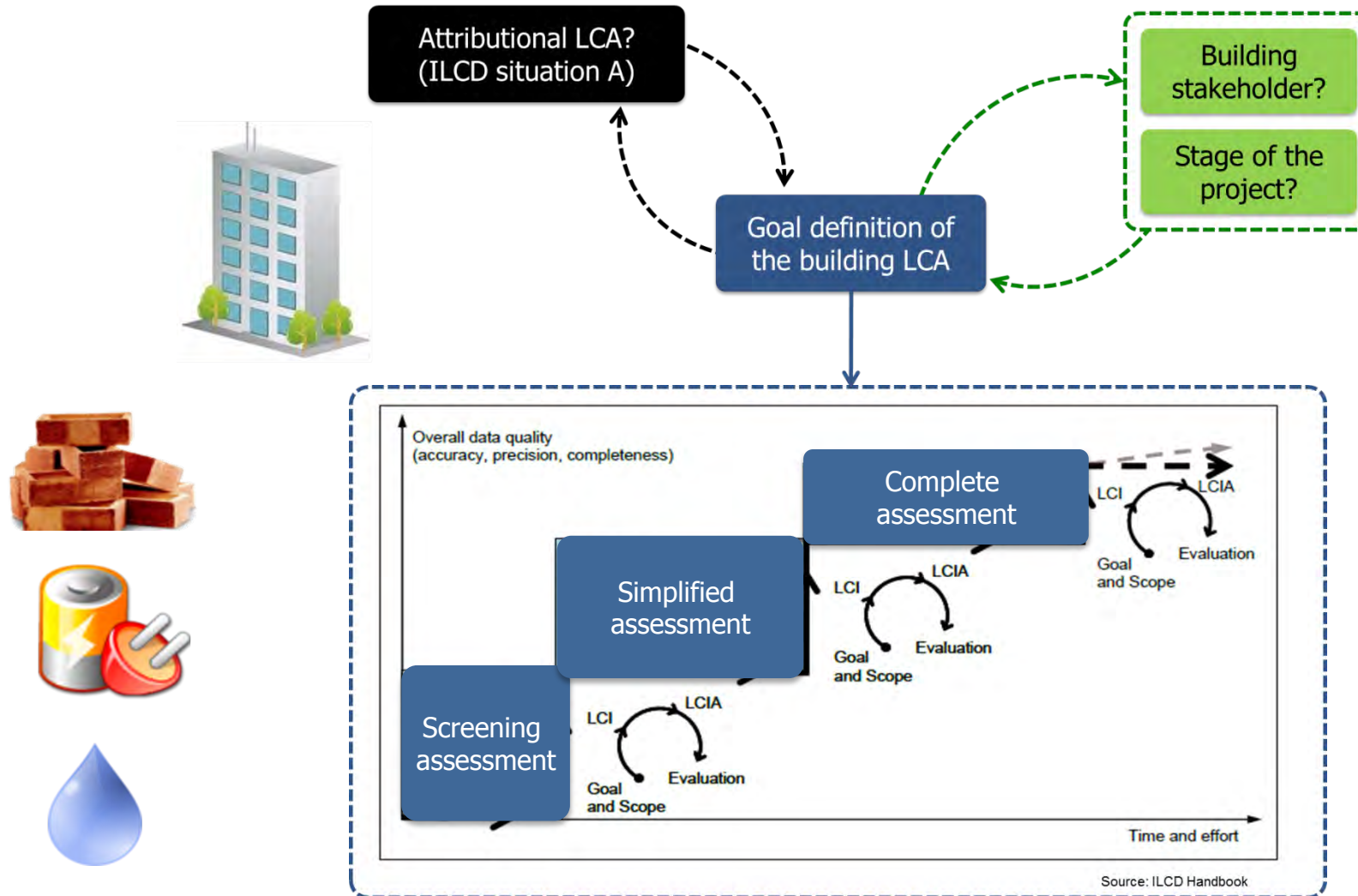
- Based on the findings of the EeBGuide project
- Selection of important aspects for building LCA
- Analysis of reference documents (ILCD Handbook, EN 15804 and EN 15978 standards), existing literature (other scientific reports and articles, other standards and EU projects) and experts workshop, external review and public consultation.
- 100 identified aspects classified according to :
 - LCA framework (goal and scope, inventory analysis, impact assessment, interpretation, reporting).
 - Life cycle stages of a building defined in EN 15804 and EN 15978 as modules A, B, C, D.
- Full guidance document available online (InfoHub: www.eeebguide.eu)



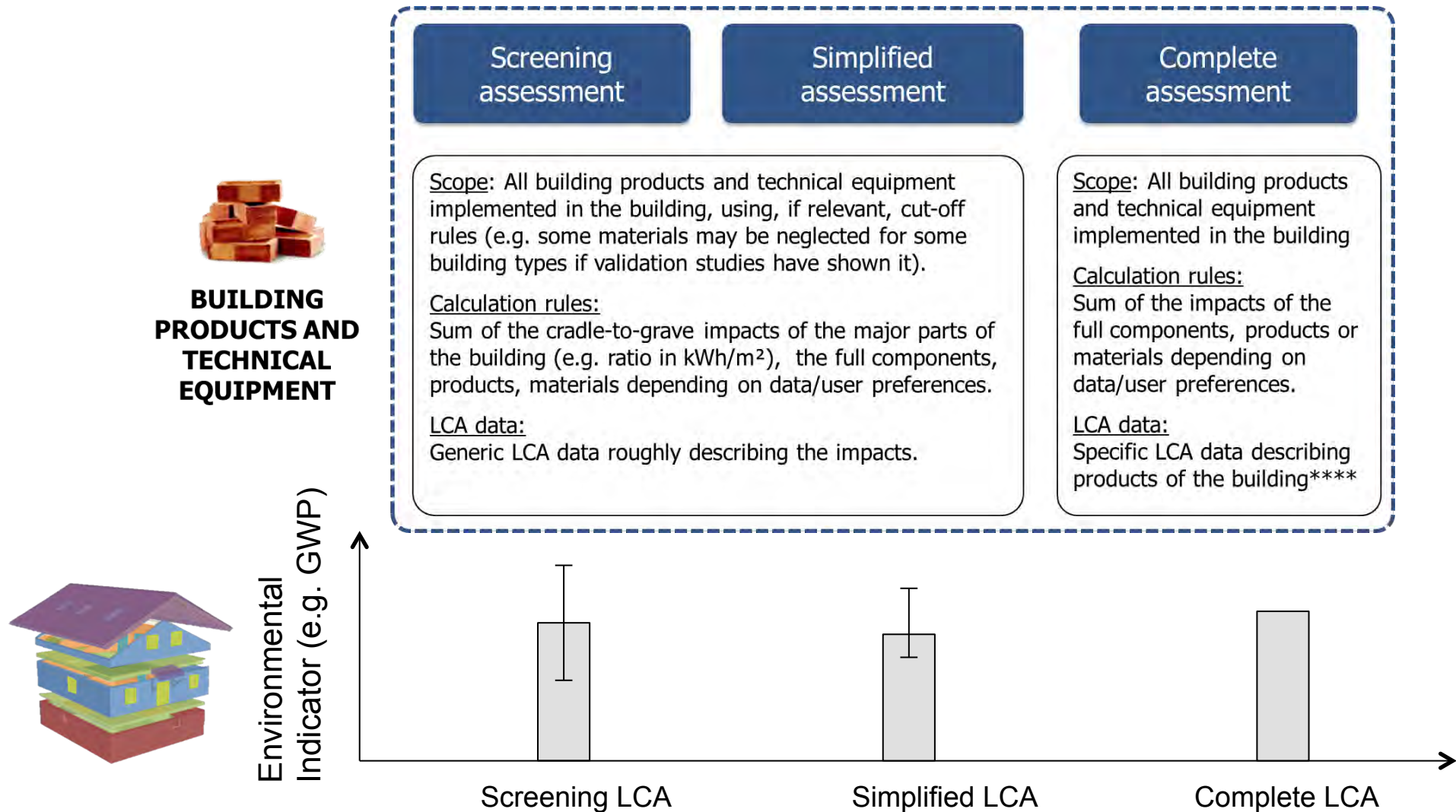
Integrated framework for building LCA tools (2)

	<div>A</div>	<div>B</div>	<div>C</div>	<div>D</div>	
	PRODUCT stage (modules A1 to A3)	CONSTRUCTION PROCESS stage (modules A4 to A5)	USE stage (modules B1 to B7)	END OF LIFE stage (module C1 to C4)	BENEFITS and LOADS beyond the system boundary
	Raw material supply, Transport, Manufacturing	Transport, Construction installation processes	Use, Maintenance, Repair, Replacement, Refurbishment	De-construction, Transport, Waste processing, disposal	Reuse, Recovery, recycling potential
			Operational Energy Use , regulated end- uses (B6)		Operational Energy Use , regulated end- uses (B6)
			Operational Energy Use , other end-uses (B6)		Operational Energy Use , other end-uses (B6)
			Operational Water Use (B7)		Operational Water Use (B7)

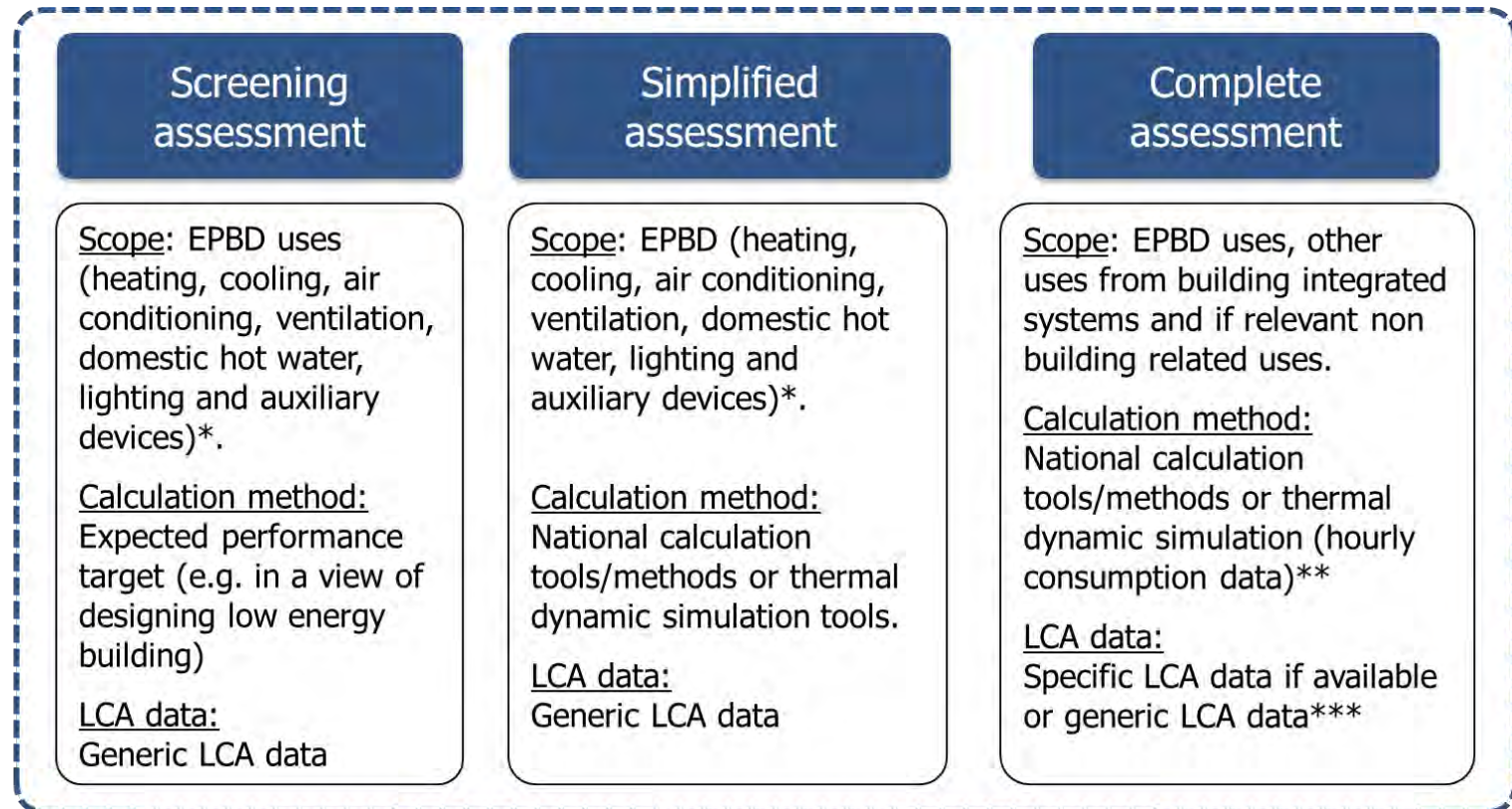
Approach: use of three study types



Study types for the cradle to grave product and equipment



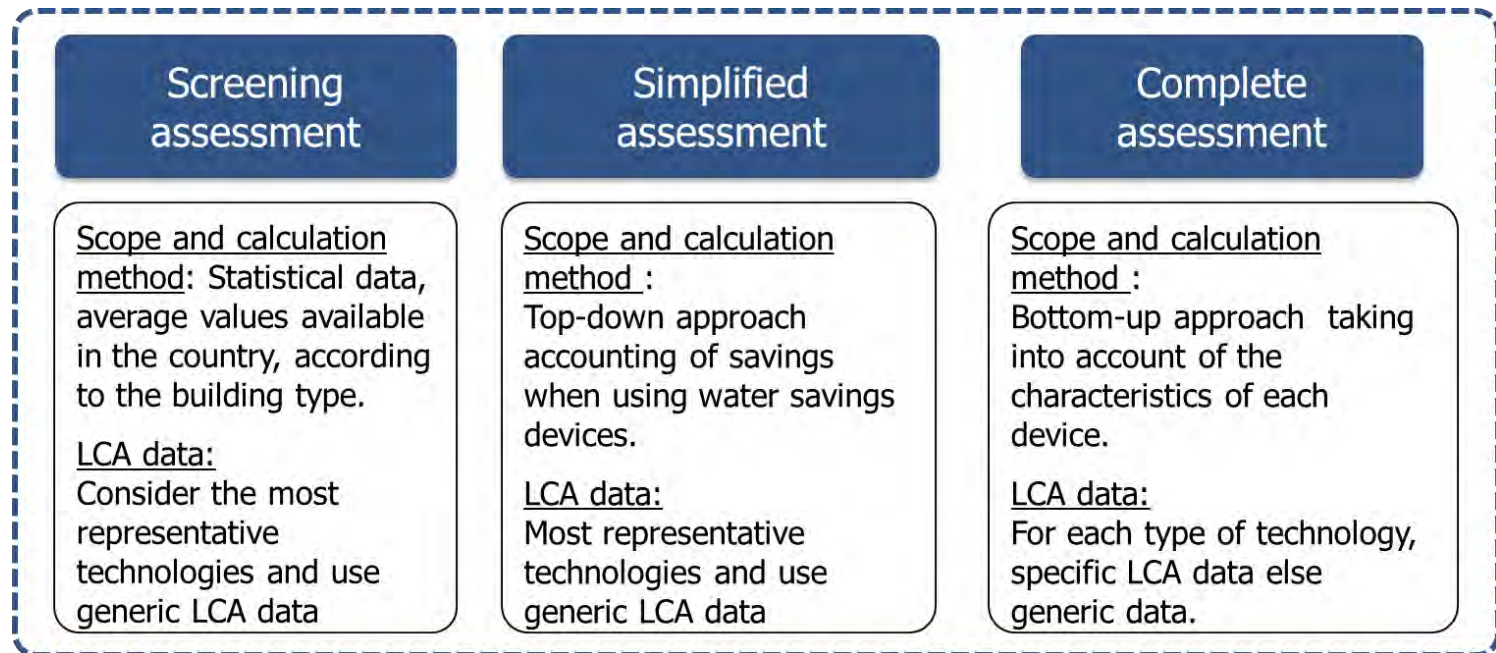
Study types for the operational energy consumption



From expected target performance e.g. 50kWh/m²/year to more detailed assessment (e.g. dynamic thermal simulation)

Study types for the operational water consumption

OPERATIONAL WATER CONSUMPTION



From statistical data, e.g. 50m³/year/person to more detailed assessment



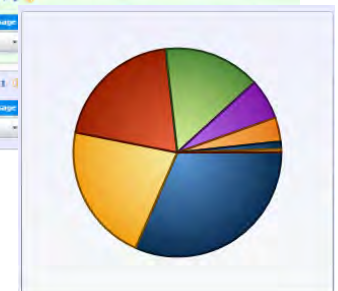
Type d'équipement	Consommation d'eau par usage	Fréquence d'utilisation	Durée moyenne d'utilisation
Douche RDC-Bouill	12 L/min	6 fois/semaine/ personne	6 minutes/ usage

De combien de types de lavabo le bâtiment dispose-t-il ? 1

Type d'équipement	Consommation d'eau par usage
Vasques (RDC+Étage)	10 L/min

De combien de types d'évier le bâtiment dispose-t-il ? 1

Type d'équipement	Consommation d'eau par usage
Évier cuisine	12 L/min



Conclusions and future steps

- LCA approach currently more and more used in the construction sector in ecodesign perspectives and building labelling schemes
- For building LCA tool developers, such a framework may contribute to
 - Provide guidance on how to integrate the existing body of knowledge in LCA
 - Adjust study types with different requirements for data, rules and precisions to fulfil the needs of practitioners and level of details of the building project stage
- Relevance of study types for the building stakeholders and project stages
 - Surveys and interviews needed with construction stakeholders
- Consistency, completeness and validation works
 - Between the study types (screening vs. complete LCA)
- Challenges for European building LCA tool developers
 - Data collection (availability)
 - Updates of the tools to implement the integrated framework / study types

Thank you for you attention!

- Acknowledgments: European Commission FP 7 programme for funding of part of this work during the EeBGuide project (www.eebguide.eu)
- More information about the adaptation of building LCA tools according to the proposed study types (derived from EeBGuide): deliverable available online: www.eebguide.eu/eeblog/wp-content/uploads/2012/12/D-4.3.-Requirements-for-Building-LCA-tool-designer.pdf
- Contact information

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