

Going sustainable in buildings

TOOL 05

End-of-Life

Introduction

This guidance tool supports users from different backgrounds in understanding and improving sustainability at the end-of-life stage of buildings. It helps users to understand how to assess the building life cycle, identify environmental and carbon hotspots, develop and compare end-of-life scenarios, and select practical strategies for renovation, dismantling, deconstruction, reuse, recycling and recovery. It also connects users with relevant EXCEL4Housing tools and resources to support more circular and resource-efficient decisions.

There are no right or wrong answers. Use the questions to reflect on your current situation and identify possible next steps.



User Journey

- 1 Identify user
- 2 Assess knowledge
- 3 Identify hotspots
- 4 Develop and compare scenarios
- 5 Select Scenario
- 6 Tools suggestions

WHO AM I?

User profile

Define yourself or your team

Reflect and define your role – Defining a simple user profile in the initial phase is an important step in driving meaningful self-reflection. Encouraging users to reflect on who they are and assess their current situation, helps to gain a clear understanding of users background, needs and context.

This self-awareness lays a foundation for the entire guidance journey. Understanding the current baseline makes it significantly easier to identify specific training needs and select the most relevant tools.

Note: This initial step aims to establish contact between the user and the guidance tool. Although it does not directly influence the selection of tools presented to the user, it prompts them to reflect on their purpose and goals. Defining a profile statement serves to characterize their profile and objectives, guiding their overall action



Select your profile

- ☐ Municipality / public authority
- ☐ Housing provider / developer
- ☐ Architect / designer / engineer
- ☐ Construction company
- ☐ Manufacturer / supplier
- ☐ Construction waste manager
- ☐ Facility or property manager
- ☐ Educator / trainer
- ☐ Student
- ☐ Researcher
- ☐ Other:

Main sustainability
needs

Profile statement

I am _____ working on _____ and
need guidance to _____ .

End-of-Life Knowledge and Practice Level

Define your level

This step helps users to reflect on their knowledge and practice based on the understanding of life-cycle impact assessment, identify carbon and environmental hotspots, develop end-of-life scenarios, and consider deconstruction, reuse, recycling, recovery and resource efficiency. Select the level that best describes your current knowledge and practice.

Level	Maturity stage	Description
Level 1	Limited	Little knowledge of building life-cycle and end-of-life impacts..
Level 2	Basic	Understands key concepts, but assessment and scenario planning are rarely known or applied.
Level 3	Developing	Understands how life-cycle impacts and hotspots can be identified and how different end-of-life options can be compared.
Level 4	Confident	Can interpret available information, explain the differences between end-of-life scenarios and identify a suitable option in an exercise or project.
Level 5	Advanced	Has a strong understanding of LCA, circularity and end-of-life strategies and can critically evaluate options and justify recommendations.

What support is needed to move one level forward?

☐ Training
 ☐ LCA / carbon data
 ☐ Tool access

☐ Material and component data
 ☐ Scenario examples
 ☐ Deconstruction / reuse guidance

☐ Waste and recovery data
 ☐ Clear indicators / KPIs
 ☐ Stakeholder coordination

☐ Life cycle assessment
 ☐ EPD
 ☐ LCA and carbon footprint

☐ Other

Select your level

Level 1
Limited

Level 2
Basic

Level 3
Developing

Level 4
Applied

Level 5
Advanced

☐
☐
☐
☐
☐

Justify your selection

Support needed

LCA and Hotspot Identification

This topic helps users review the main stages of a building, element, material or component and identify the most important environmental impact, waste issue or circularity opportunity. Users can use available LCA results or a simple preliminary review. The selected hotspot will guide the next exercise.

Main building life-cycle stages

The stages below are the standard building life-cycle modules used to structure a Life-Cycle Assessment (LCA), based on EN 15978:2011. The letters A, B and C identify the different parts of the building life cycle, while the numbers identify the activities included in each stage.

PRODUCT A1-A3	CONSTRUCTION A4-A5	USE B1-B7	END OF LIFE C1-C4
Producing building materials and components before they reach the construction site	Transporting products to the site and installing them.	Using, maintaining and operating the building	Demolishing the building and managing materials and waste
A1: Raw material supply A2: Transport A3: Manufacturing	A4: Transport to site A5: Construction and installation	B1: Use B2: Maintenance B3: Repair B4: Replacement B5: Refurbishment B6: Operational energy use B7: Operational water use	C1: Deconstruction / demolition C2: Transport C3: Waste processing C4: Disposal

How to identify the hotspot

When LCA results are available:	Compare the same indicator across all stages; the largest result indicates the hotspot.
When LCA results are unavailable:	Review quantities, replacement needs, waste, separation difficulty and reuse potential.

Practical exercise: Identify one life-cycle hotspot

Select one building, element, material or component. Review each stage, add available LCA results or observations, rate the priority as Low, Medium or High, and select the stage that needs the most attention.

Life-cycle stage	LCA result for one indicator Example: kg CO₂e, percentage of total impact, or "Not available"	Main impact, issue or opportunity	Priority
Product A1-A3			☐ Low ☐ Medium ☐ High
Construction A4-A5			☐ Low ☐ Medium ☐ High
Use B1-B7			☐ Low ☐ Medium ☐ High
End of life C1-C4			☐ Low ☐ Medium ☐ High
Final Conclusion	Priority stage	Why was it selected?	Identified through: ☐ LCA results ☐ Preliminary review

End-of-Life Scenario Development and Comparison

This topic helps users from different backgrounds explore end-of-use options for a building, element, material or component. It supports both real projects and learning by comparing repair, reuse, recycling, recovery and disposal based on environmental impact, waste, resource efficiency and feasibility.

End-of-life scenario options

The options below are examples; other relevant scenarios may also be considered.

Renovation / Life extension	Repair, upgrade, adapt or retain the building/component so it remains in use for longer.
Careful removal for reuse	Carefully remove components so they can be reused in the same project or in another application.
Deconstruction / Recycling or Recovery	Separate materials and components to support recycling, recovery and documented waste management.
Demolition / Disposal	Remove the building/component and send materials to treatment or disposal when higher-value options are not feasible.

How to compare the scenarios

Environmental impacts	Waste and Circularity	Recourse efficiency	Practical feasibility
Carbon, Energy, Transport and other impacts	Waste avoided and potential for reuse, recycling or recovery.	Materials retained and need for new resources.	Condition, safety, cost and available options

Practical exercise: Scenario analysis

Select one building, element, material or component that requires an end-of-use decision. You may use the item from the previous exercise if it is relevant. Develop two or three possible scenarios, compare their impacts and opportunities, and select the option to explore further.

	Scenario 1	Scenario 2	Scenario 3
Scenario			
What happens?			
Environmental impact	☐ Low ☐ Medium ☐ High Reason	☐ Low ☐ Medium ☐ High Reason	☐ Low ☐ Medium ☐ High Reason
Waste, reuse, recovery			
Feasibility	☐ Low ☐ Medium ☐ High Reason	☐ Low ☐ Medium ☐ High Reason	☐ Low ☐ Medium ☐ High Reason
Priority	☐ 1 ☐ 2 ☐ 3	☐ 1 ☐ 2 ☐ 3	☐ 1 ☐ 2 ☐ 3

Final Conclusion	Preferred scenario	First action:
	Why selected:	Responsible person

Preferred Scenario and Action Plan

This topic helps users turn the preferred scenario from the previous exercise into a practical plan. It supports both real projects and learning activities by defining the goals, first actions, responsibilities, required support, evidence of progress and a review point.

From strategy to action

01	Confirm	Which strategy was selected?
02	Define	What should be achieved?
03	Act	What is the first practical action?
04	Assign	Who is responsible and what support is needed?
05	Review	How and when will progress be checked?

What should the action plan include?

Clear objective State the main result the strategy should achieve	Practical actions Start with realistic steps that can be assigned and followed consumption?	Responsibility Identify who leads the action and who needs to contribute
Support and resources Note the data, skills, budget, tools or partners required	Evidence of progress Choose a simple output or indicator that shows progress	Review point Set when the plan will be checked and updated

Practical exercise: Action plan

Use the preferred scenario selected in the previous scenario comparison. Define a clear objective, plan the first actions, assign responsibilities, identify the support and evidence needed, and set a review point.

Action plan

Step	Action	Responsible person	What is needed	Evidence of progress	Target timing
First action					
Next action					
Follow-up action					

Final review

Main objective	
Expected benefits	

Recommended tools

Excel4housing toolbox

Review your answers from the previous pages and identify your main planning and design needs. Then use the tables below to find the tools that best match those needs.

If the user needs...	Recommended tools	Why it fits
To assess carbon footprint and circularity performance You want to understand the environmental and carbon impacts of the building and explore how circular strategies could improve its performance.	KATCH_e CE Analyst	Assesses carbon and circularity performance and explores improvements through circular strategies.
	One Click LCA	Calculates carbon and environmental impacts across the building life cycle
To assess life-cycle impacts and identify environmental hotspots You want to calculate impacts across the building life cycle and identify which materials, stages or activities contribute most to the overall environmental impact.	One Click LCA	Identifies the life-cycle stages, materials and activities contributing most to environmental impacts.
	eco2soft	Assesses building environmental impacts across life-cycle stages and supports comparison between them.
To perform an alternative building life-cycle assessment To evaluate the environmental performance of a building using another LCA approach and compare impacts across different life-cycle stages.	eco2soft	Supports the environmental assessment of buildings and comparison of impacts across life-cycle stages.
To assess the impacts of reuse, recycling and material recovery To understand the potential environmental benefits and impacts of reusing components, recycling materials, recovering resources or avoiding disposal.	Tool under definition	Helps assess the potential benefits and impacts of reusing components, recovering materials, recycling and avoiding disposal in different end-of-life scenarios

Recommended tools

Excel4housing toolbox

If the user needs...	Recommended tools	Why it fits
To improve resource efficiency at end-of-life You want to evaluate how materials and resources can be retained, reused, recycled or recovered to reduce waste and the demand for new raw materials.	under definition	Helps evaluate how effectively materials and resources are retained, reused, recycled or recovered, reducing waste and the need for new raw materials.
To identify suitable Operation & Use tools for your next steps	EXCEL4Housing 4.0 toolbox filter	Allows users to select tools by phase, need, difficulty, data requirement and sustainability goal