Introduction

Circular Design Framework

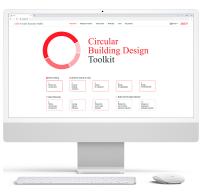
Developed by Arup and the Ellen MacArthur Foundation, the Circular Building Design Toolkit brings together strategies, case studies and tools for designing more circular buildings, meaning reduced waste and carbon for a healthier planet and healthier people. The principles of the Circular Economy have been translated into a prioritized set of strategies and actions relevant for real estate projects.

In this first part of the workshop, the team will learn why circular design principles are important, the basis of the developed framework ,and how it is aligned with international policies.

The key questions to be asked are, what is a circular building? And how can the built environment benefit from adopting Circular Economy principles?

Click on the link below, open the platform and start learning about the framework.

Open the Circular Buildings Toolkit to learn more
https://ce-toolkit.dhub.arup.com/



What is a circular building?

Explanation Ellen MacArthur Foundation

The world's building stock is expected to double by 2060, the equivalent of building another New York City every month.

According to National Geographic, buildings in cities account for more than 30% of global greenhouse gas emissions. Added to this is the ineffective use of materials and space leading to significant economic losses, and a huge demand for housing. (One third of urban residents lack decent housing.)

If we are to build thriving, liveable, resilient cities, we clearly need to start thinking and acting differently when it comes to buildings. Architects, designers, urban planners, engineers, businesses, and policy makers all need to be involved in the process of redesigning our urban systems.

Circular Buildings Toolkit

Build nothing	Build for long term value	Build efficiently	Build with the right materials
1. Refuse unnecessary new construction Reused floor area [% of total GFA]	**2. Increase building utilisation** Increased utilization (m2*hr/week) [%]	**6. Refuse unnecessary components** Material use intensity per functional unit [kg/unit/yr]	**8. Reduce the use of virgin materials** EMF's Material Circularity Indicator (MCI)
	3. Design for longevity EU Level(s) Whole Life Cycle Costs [$/m2/yr]	**7. Increase material efficiency** Material use intensity by area [kg/sqm /yr]	**9. Reduce the use of carbon intensive materials** Embodied Carbon Intensity [kgCO2eq/m2/year]
	4. Design for adaptability EU Level(s) Adaptability Rating		**10. Design out hazardous/ pollutant materials** Environmental Impact Cost [€/m2/year]
	5. Design for disassembly EU Level(s) Disassembly Potential Rating		

Discover

Client Goals

The earlier circular economy principles are embedded in a project design process, the most impactful these will be in the project outcome. It is recommended to involve investors and developers when defining the specific circular objectives for the project.

The discovery stage of this workshop aims at aligning high level goals of the project and assess them under a "circularity lens". What is the project brief? Does the project brief align align with circular economy principles? Does it align with the developer's overall sustainability strategy/goals? Does it align with the project team expectations in terms of sustainability?

A key component of the Circular Buildings Toolkit is a library of Case Studies, featuring projects which have implemented circular design principles. Browse through the library (linked below) and find some inspiration!

Open the Case Study Library and find some inspiration: https://ce-toolkit.dhub.arup.com/

1 What is your design brief?

Insights
- Individually, describe the project in one sentence
- Take some minutes to discuss within the smaller groups

2 What would constitute a successful project?

Targeting - Individually, respond to the following questions:
- What metrics are being used to define success?
- Are these metrics aligned with circularity/sustainability?
- Take some minutes to discuss

3 What are the project ambitions with respect to circularity?

Evaluating - Individually, respond to the following questions:
- What are the sustainability goals of the project? Are there any specific targets?
- How do these align with circular design principles?
- Take some minutes to discuss

Define

Circular Strategies

In the third step of the workshop, the project team reviews the circular design strategies in detail, understands their content and KPIs, and comes up with ideas/actions on how these strategies can be implemented, if they are relevant to the project.

This part of the workshop is intended to be a brainstorm session, so all ideas are welcomed! Ideally, these should be aligned with the *Discover* step.

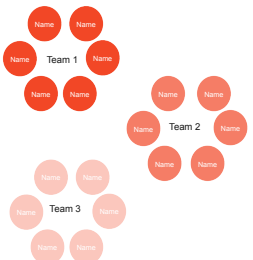
The actions and case studies within the CBT toolkit (link below) can be used for inspiration, but should not limit the ideation process.

Open the Strategies tab of the Circular Buildings Toolkit
https://ee-toolkit.dhub.arup.com/strategies

Breakout Teams

77 min

Break the team up in different teams of 3-4 people. Depending on the size f the group, assign each team a number of strategies so that the 10 strategies in the framework are covered. Teams review their assigned strategies, following the guidance on the board.



S1 S2 S3 S4 S5 S6 S7 S8 S9 S10

Review of the Circular Strategies

Ideating - Break out into smaller teams, review and discuss the strategies on the Toolkit, and understand the KPIs.
- Move to action, and individually post actions/elements that the project could implement/consider under each strategy
- Make use of the action cards and case studies within the CBT inspiration.
- Take some minutes to discuss the posted actions within the smaller teams
- Select one representative from each team to present the outcomes to the larger group

Strategy 1

Strategy 2

Strategy 3

Strategy 4

Strategy 5

Strategy 6

Strategy 7

Strategy 8

Strategy 9

Strategy 10

Prioritize

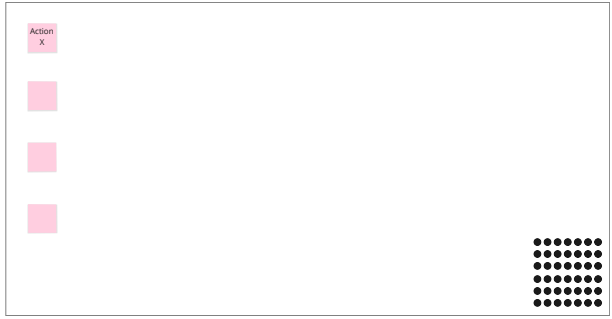
Relevant Actions

In the fourth part of the workshop, the relevant actions from the *Define* step are prioritized.

Take some minutes to check all the ideas posted in the previous board. Individually, select the 3 actions you consider to be the most important and suitable to the project and poste them on the board to the right. Take a minute to look at the "top" actions pasted to the board and, using the dots, vote for 3 (not yours) that you also find to be priority.

The heat map allows to identify the actions which are considered as priority by the project team. These actions are then assessed in more detail, identifying opportunities and challenges, specific to the project.

Heat Map - Individually, select the 3 actions you consider should be implemented in the project and vote for your 3 top-picks from others



Contextualization of the Actions

Further contextualize the key strategies from the heat map. What does the implementation of this action means to the project?
- Transfer the most-voted actions from the heat map to the table below
- As a group, evaluate the specific opportunities and challenges arising from the implementation of each action, based on the following factors: **cost implication, supply chain implication, project timeline, technical complexity, and others.**

Open the Strategies tab of the Circular Buildings Toolkit
https://ce-toolkit.dhub.arup.com/strategies

Must haves!	Opportunities	Challenges

Develop

Circular Design Statement

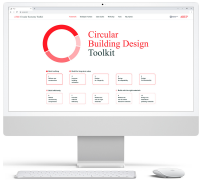
In this final step, the Circular Design Statement is created. The Circular Design Statement will function as a road map to the project team.

The Statement defines what the project should achieve in terms of circularity, and how it's goin to be achieved. One or two sentences should be sufficient.

In the second step, the design team is going to define the specific project targets. The project targets can be more technical and specific. Select the relevant KPIs and explain how you're going to achieve them.

This part of the workshop can be done on the Miro board, however, the Circular Design Statement can also be defined on the Toolkit directly. The link below will bring you straight to the 'add project' part of the toolkit.

Add your Circular Design Statement directly to the Toolkit https://ce-toolkit.dhub.arup.com/



Agree on a Circular Design Statement for the project

How is the design team going to achieve this?

Answering the questions below:
What KPIs are relevant to achieve the Circular Design Statement?
What are the specific project targets to achieve the Circular Design Statement?
What follow up actions are needed to achieve this?