

Circular Buildings Toolkit

par Arup en partenariat avec la fondation Ellen MacArthur



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Titres et expérience professionnels

- ✓ Membre de l'OIQ
- ✓ Professionnelle du développement durable Envision (ENV SP)



Milieu urbain

Le contexte

Pour les bâtiments, la lutte contre les changements climatiques sera gagnée ou perdue selon les matériaux et les méthodes de construction que nous choisissons d'adopter.

Notre partenariat avec EMF

Nous voulons adopter les principes d'économie circulaire.

ARUP



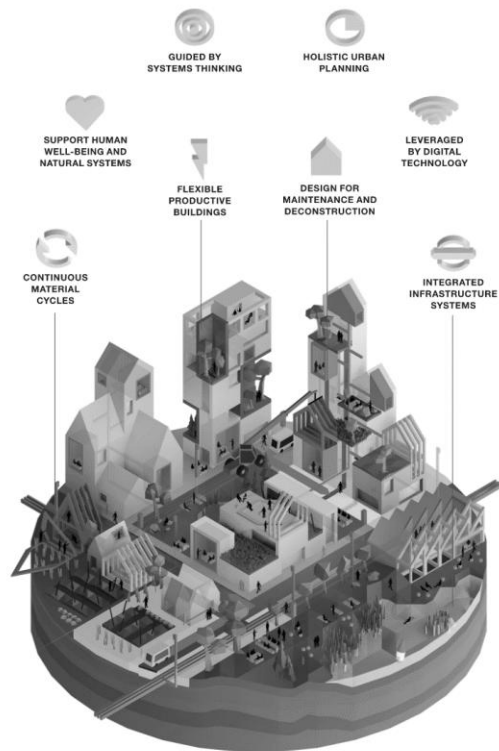
75 ans dans
l'environnement bâti

10 ans à repenser le
système

Partenariat Arup-EMF
pour repenser la
conception de
l'environnement bâti

Notre vision

Nous devons donc adopter les principes d'économie circulaire au sein de l'environnement bâti.



Nous devons stimuler un **changement systémique** en nous éloignant d'un **système linéaire**

Prendre

Construire

Jeter

et en nous rapprochant d'un **système circulaire**

Éliminer

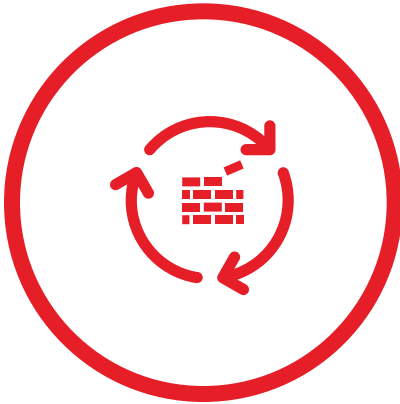
Circuler

Régénérer

Source: Arup and the Ellen MacArthur Foundation, *First steps towards a circular built environment*, 2018

Notre vision

Ces trois objectifs principaux sont à la base du Circular Buildings Toolkit.



**Créer des directives
pratiques pour toutes les
parties prenantes du
secteur de la construction**



**Aligner l'outil sur les
principales réglementations
afin d'assurer la pérennité
des actifs**



**Créer un cadre pour
l'innovation et l'impact
positif**

La plateforme

<https://ce-toolkit.dhub.arup.com/>

Circular Buildings Toolkit

Sommaire

Cette boîte à outils est accessible à tous et comporte trois éléments clés :

LEARN

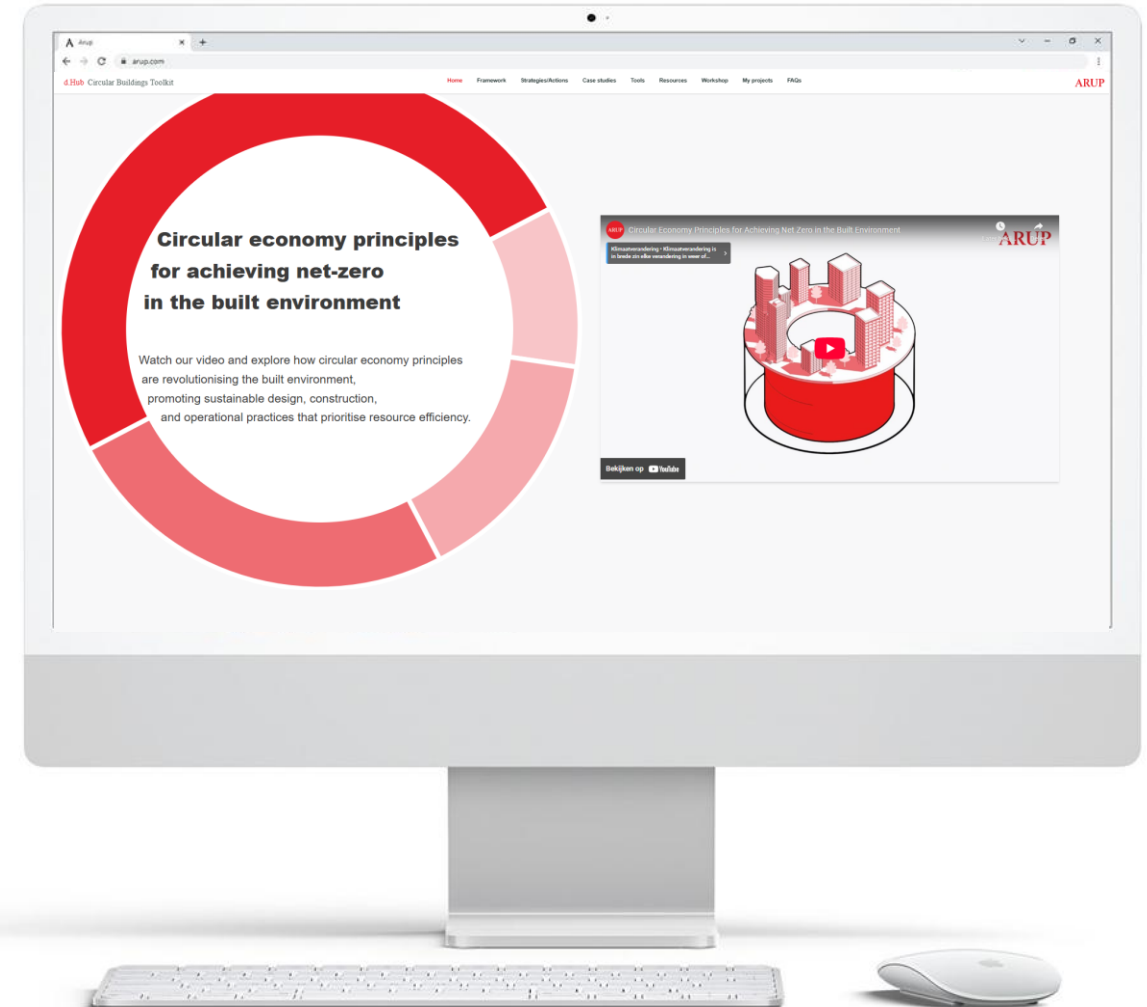
APPRENDRE

ENGAGE

COLLABORER

ACT

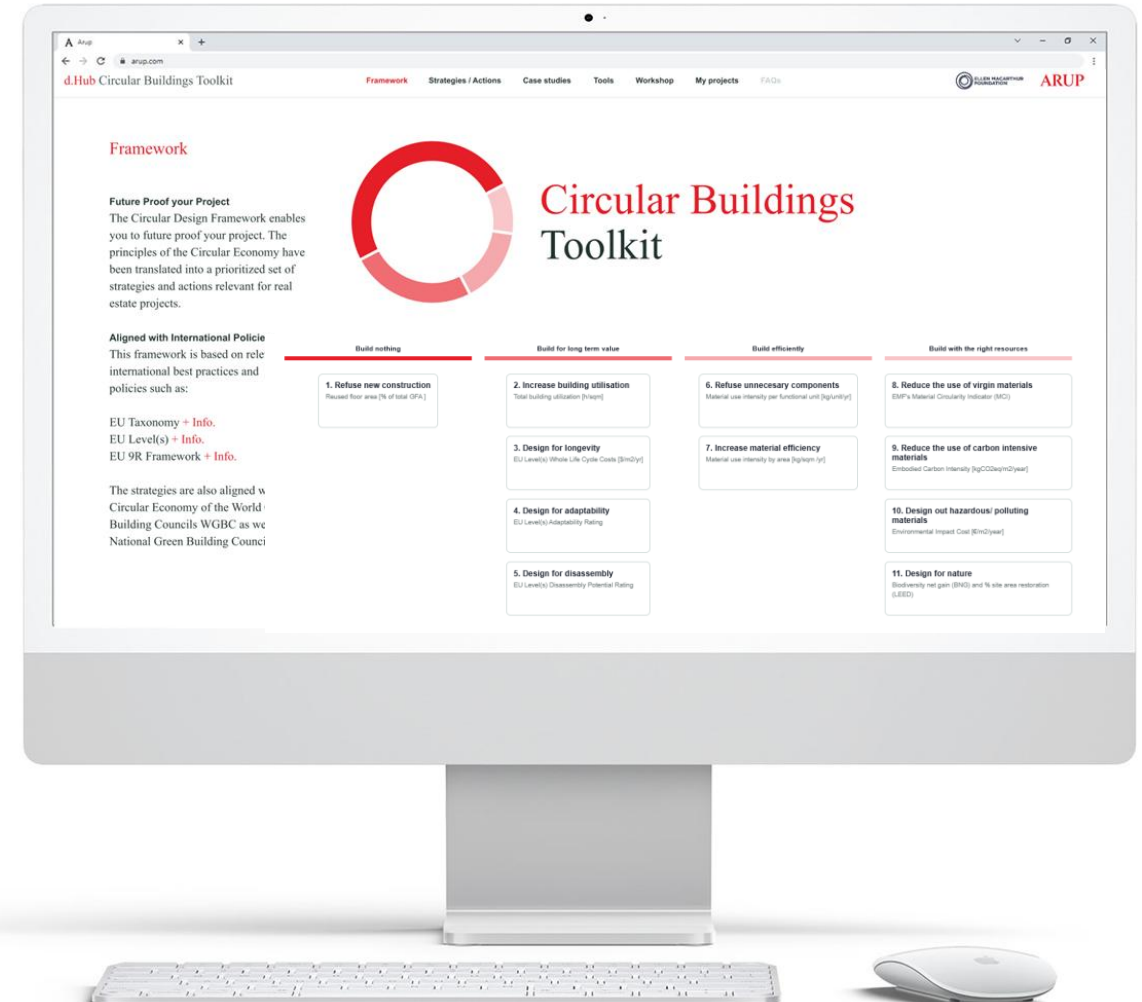
AGIR



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Principes d'économie circulaire

- 1) Ne rien construire
- 2) Construire pour une valeur à long terme
- 3) Construire de manière efficace
- 4) Construire avec les matériaux appropriés



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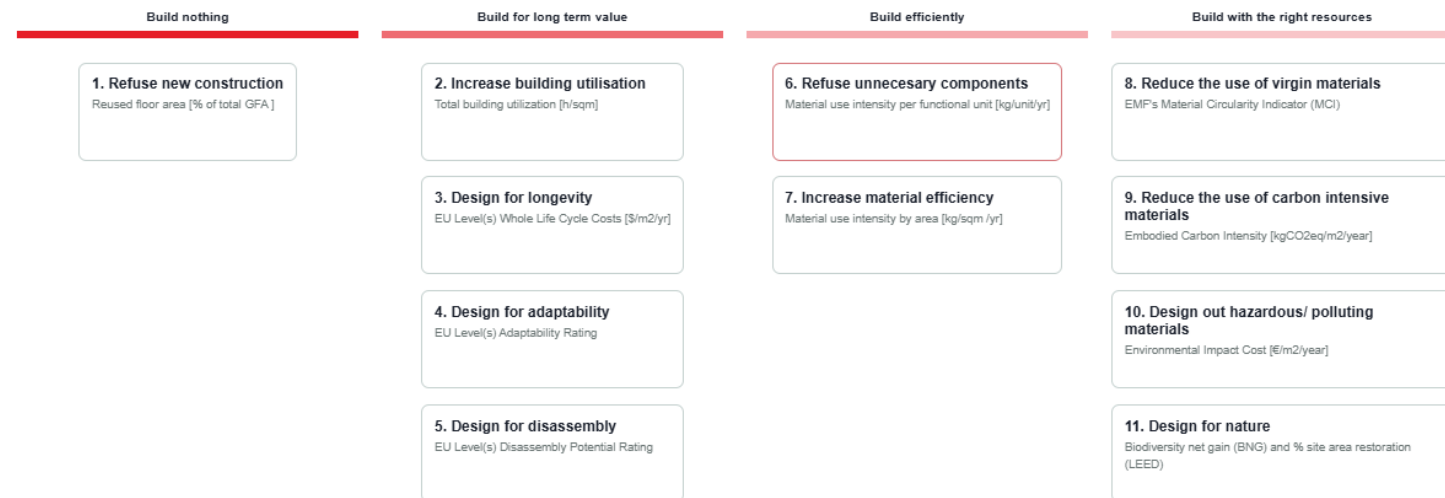
Stratégies de conception circulaire

11 stratégies de conception circulaire:

- Indicateurs clé de performance
- Priorité structurée
- Mise en œuvre flexible
- Alignement avec les cadres existants



Circular Buildings Toolkit



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Cartes de stratégies

Les utilisateurs ont accès à un ensemble de cartes de stratégies, chacune contenant les informations suivantes:

- Description
- Indicateurs clé de performance pertinents
- Avantages
- Défis
- Niveau d'impact
- Phase clé de conception
- Impact du concepteur

Strategy

1. Refuse unnecessary new construction

Description

Early decisions on design and program of a project yield massive impact on the following execution phases. A deep and thoughtful interrogation of the project brief against the client's needs to reflect whether it presents the most efficient solutions is key to facilitate a circular development.

This strategy aims at both, the prevention of consumption of new resources, and maintaining already used resources at their highest possible value.

Indicator - KPI

Share of project Floor Area composed by a reused asset (%)

Impact level

■■■■■■■■

Key Design Phase

RIBA 0

Design Impact

■■■■■ Client
■■■■■ Architect
■■■■■ Structural Eng.
■■■■■ Facades Eng.
■■■■■ MEP Eng.
■■■■■ Interior des.

Strategy

9. Reduce the use of carbon intensive materials

Description

This strategy aims the prevention of carbon intensive materials. Embodied carbon can be responsible for more than half of the total life cycle carbon. At all levels, this strategy aims to promote the use of reused products and recycled materials as well as renewable and biobased materials.

Indicator - KPI

Embodied Carbon Intensity measured over the whole building life-cycle, defined as the overall Global Warming Potential per square meter per year. [kgCO₂eq/m²/year]

Benefits

- Reduced embodied carbon emissions.
- Contributes towards sustainability benchmarking schemes.
- Contributes to improved health and wellbeing for building users through material ingredient transparency and

Impact level

■■■■■■■■

Key Design Phase

RIBA 4

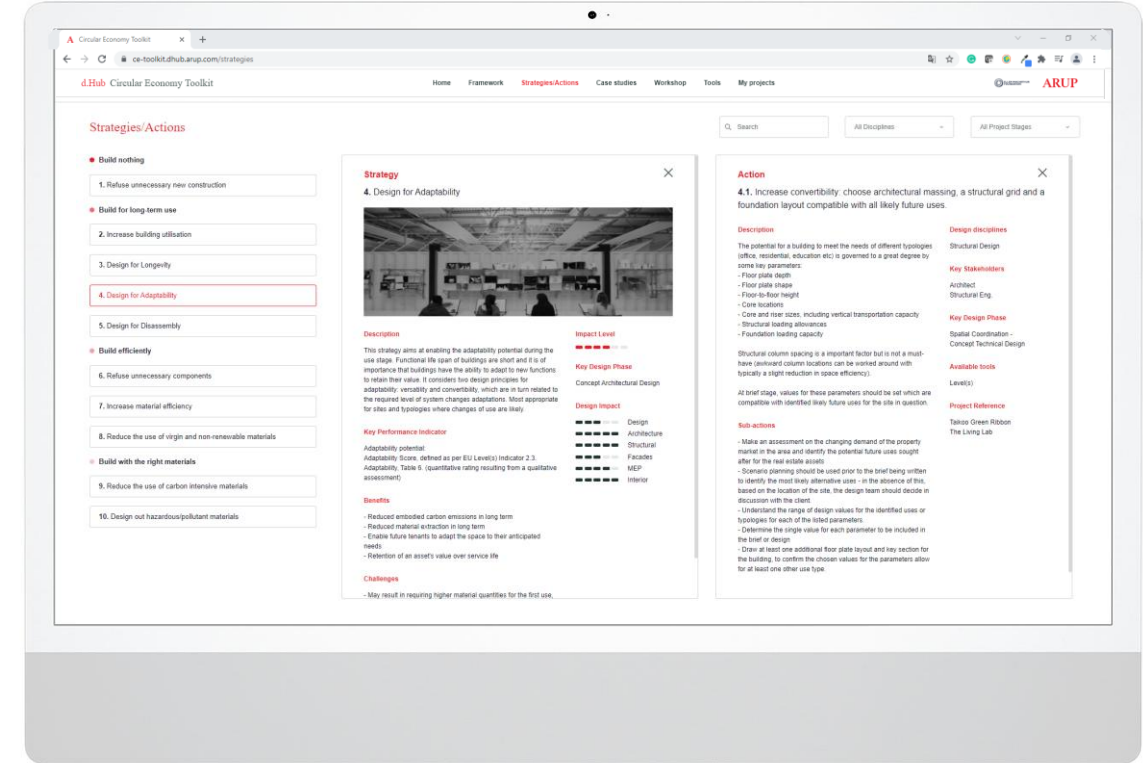
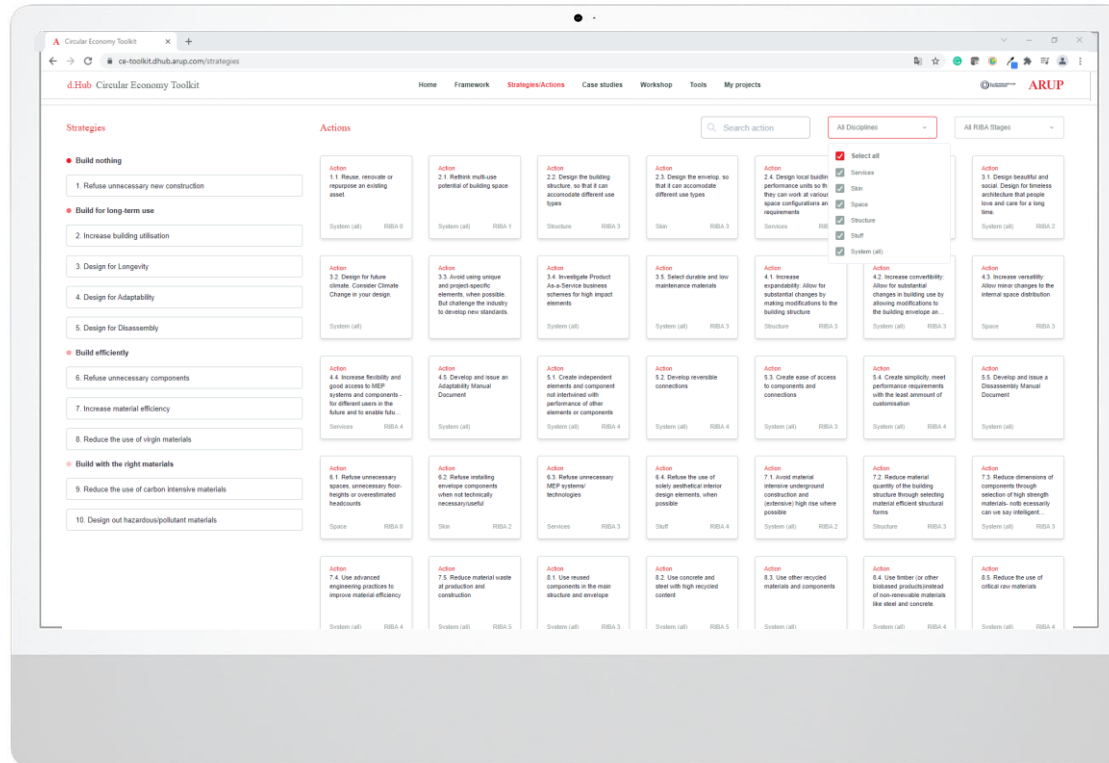
Design Impact

■■■■■ Client
■■■■■ Architect
■■■■■ Structural Eng.
■■■■■ Facades Eng.
■■■■■ MEP Eng.
■■■■■ Interior des.

Indicator

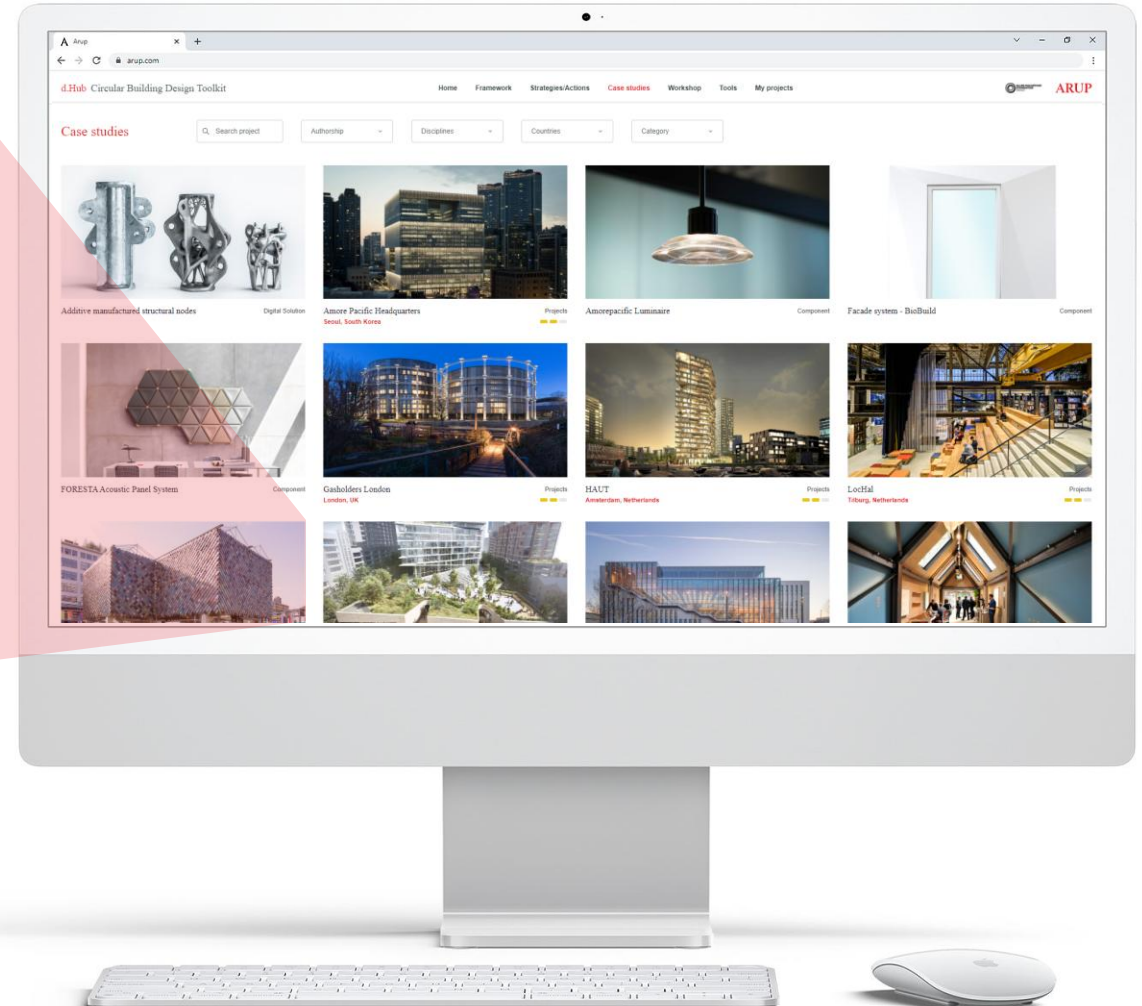
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Cartes d'action



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Bibliothèque d'études de cas

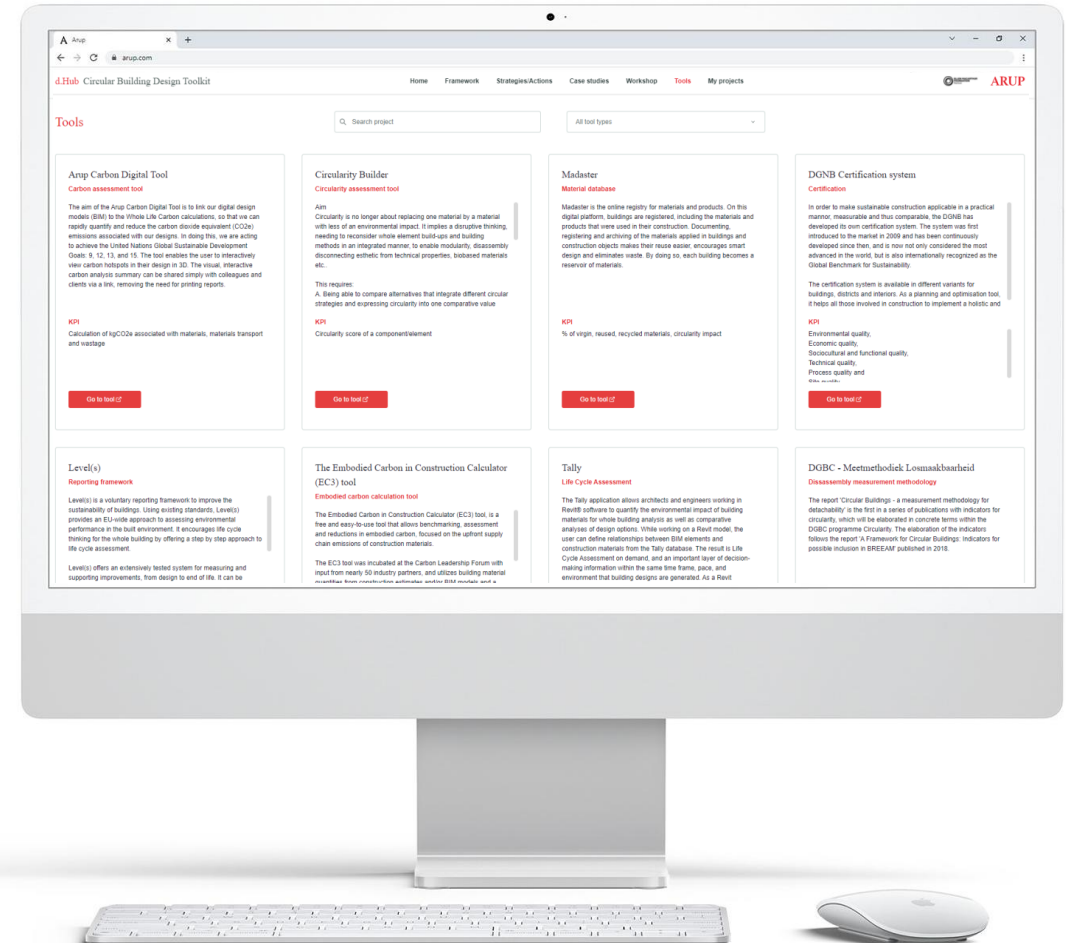


Circular Buildings Toolkit

Répertoire d'outils

Ce répertoire contient les outils pouvant contribuer à la mise en œuvre d'actions spécifiques ou aider à suivre les performances selon les indicateurs définis.

- Outils de conception ou d'évaluation numériques
- Cadres d'évaluation
- Lignes directrices et méthodologies
- Documentation réglementaire





ELLEN MACARTHUR
FOUNDATION
Partner

ARUP

Circular Buildings Toolkit

Matériel pour faciliter des ateliers

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 as 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://ce-toolkit.dhub.arup.com/strategies>

Breakout Teams

Break the team up in different teams of 3-4 people. Depending on group size, assign each team a number of strategies so that the 15-20 framework are covered. Teams review their assigned strategies, guidance on the board.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Discover

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 action/elements that the project could implement/consider under each strategy.
Make use of the action cards and case studies within the CBT inspiration.

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 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

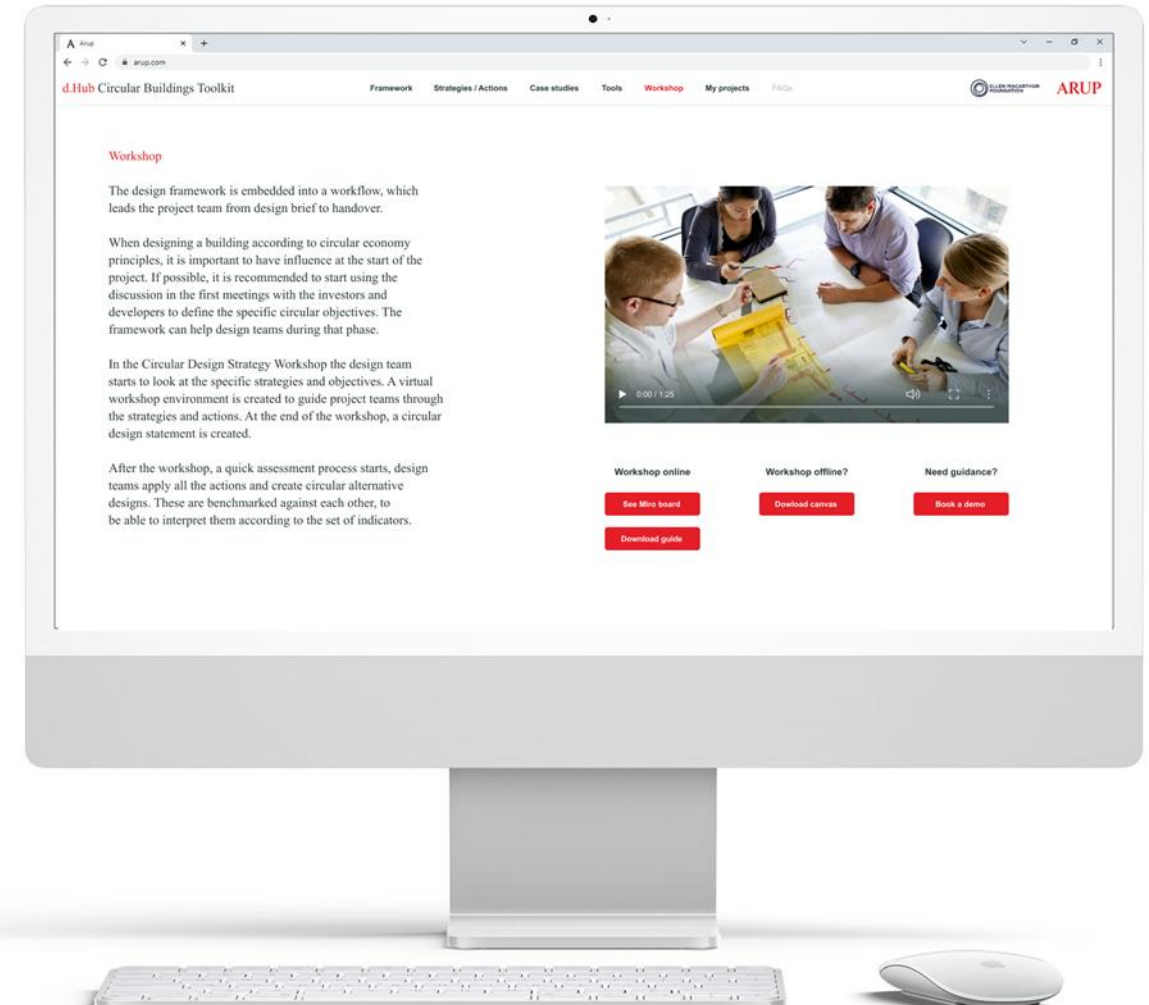
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3 What are the project ambitions with respect to circularity?

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

□ □ □ □



Circular Buildings Toolkit

Enregistrez votre projet



Arup Login

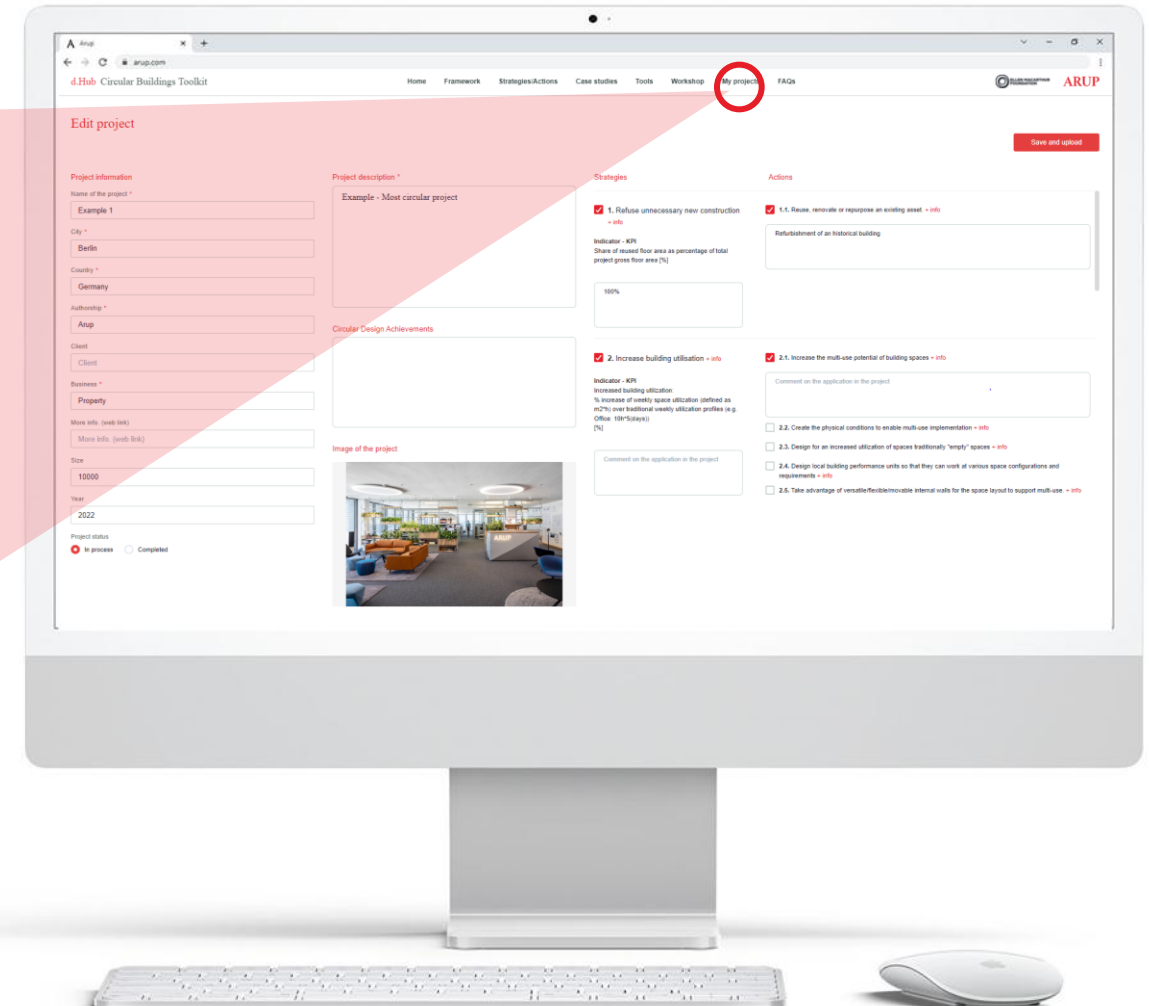
Email

Password

[Forgot your password?](#)

Need an account? Sign up

Log in



C'est le temps d'agir!

Enregistrez votre projet.
Créez votre compte,
ajoutez votre projet et
commencez votre parcours
circulaire dès aujourd'hui.

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