

Promoting Circular Building Adaptability in Building Transformation

An Action- and Design Research-Oriented Application

Summary of workshop 2

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1. Overview of the case project and the organized workshop on 9-July 2024

The case project is a monumental office building that will be transformed into a multiple-office building. The building belongs to DSM, a multinational company specialized in fields related to nutritions and materials, while the building belongs to the developer (BOEi). **Table 1** briefly presents the profile of the case project.

Table 1: Case study profile

Iteam	Value
Year of construction	1907
Location	South Holland
Land area	6,059 m ²
Gross floor area	6,530 m ²
Lettable floor area	3,581 m ²
Number of floor plans	4 floors + roof
Building use	Office
Construction systems and materials	Brick, steel, concrete, and timber

On Tuesday 9-7 2024, a 2-hour reflection workshop was organized with the developing team of this project. The focus of this second workshop was twofold as follows:

1. Collaboratively reflecting on the progress of implementing 12 circularity- and adaptability-oriented strategies that have been perceived as possible for the project in the last workshop.
2. Collaboratively reflecting on carried out improvements on the CBA-AR framework based on the outcomes of the last workshop.

The 12 strategies that have been considered possible in the last workshop include the following: (1) Utilization of secondary (reused/recycled) materials; (2) utilization of reusable/recyclable materials; (3) utilization of adjustable building components; (4) utilization of dismountable building components; (5) utilization of flexible and integrated building installations; (6) utilization of renewable energy technologies; (7) procurement of the service of building products; (8) send back discarded material for reuse/recycling; (9) repurpose old building materials/products; (10) products exchange; (11) repair of old building components; and (12) utilization of rented-second-hand products.

Regarding the improvement of the framework, different components have been incorporated into the framework, namely project phases, corresponding building layers, and examples. **Figure 1** presents the revised version of the framework before this workshop. In addition, a user booklet was compiled as a guide to describe the strategies – including their definition, examples, advantages and disadvantages – to the users and stepwise approach to follow when using the framework as a guiding, assessment and reporting tool. **Figure 2** and **Figure 3** present the proposed tool and stepwise approach in the booklet, respectively.






















































































Strategies for Circular Building Adaptability in Adaptive Reuse				Phase to implement	Related Layer(s)	Examples	Determinants of Circular Building Adaptability							Enabling and Inhibiting Factors																	Evaluation of the Strategies			
							Adaptability Determinants			Interrelated Determinants			Circularity Determinants		Enabling Factors												Inhibiting Factors							
							 Functional Convertibility	 Volume Scalability	 Asset Refit-Ability	 Configuration Flexibility	 Product Demountability	 Asset Multi-Usability	 Design Regularity	 Material Reversibility	 Building Maintainability	 Resource Recovery	 The building Characteristics	 Collaboration & Partnership/Industrial Symbiosis	 Presence of Motivated/Capable Team	 Economic Feasibility of Basic Strategies	 New Business Models	 Policy/Legislative Support	 Enabling/Digital Technologies	 Location of the Project	 Quality and Performance Certification	 Social Acceptance	 Lack of Expertise	 Technical Complexities with Building Products/Materials	 Economic Infeasibility of Innovative Strategies	 Tendency to Follow Traditional Paradigms	 Lack of Data and Warranty on Old Materials	 Legal and Legislative Restrictions	 Fragmentation of the Building Industry	Effectiveness of the Strategy in Promoting CBA
Passive Strategies	1. Design Standardization 	Design	S4, S5, S6	Consisted use of walls, doors and windows				✗	✗		✗			✗	✗				✗				✗					✗	4	3	5	4		
	2. Separation of the Building Layers (e.g. Separated Walls) 	Design	S3, S4, S5, S6	Partitions are independents connected by dry connections		✗		✗	✗					✗									✗	✗				✗	5	3	4	4		
	3. Open the Floor Plan 	Design	S5	Open office space		✗		✗						✗										✗					4	3	3	3.3		
	4. Provision of Multi-Purpose Spaces 	Design	S5	Spaces that can be used as offices and meeting rooms						✗					✗	✗								✗	✗					4.5	3	4.5	4	
	5. Modularization of Spatial Configuration (Layout) 	Design	S4, S5	Unitized and repetitive pattern of rooms	✗						✗	✗		✗				✗						✗				✗	4.5	3	4	3.8		
	6. Utilization of Standardized Building Products 	Design	S4, S5, S6	Unitized and repetitive pattern of rooms						✗	✗				✗									✗						3	4	4.5	3.8	
	7. Provision of a Core for Building Services 	Design	S5	Central area providing an elevator and a shaft	✗									✗										✗	✗					3	3	3	3	
	8. Design for Surplus Capacity 	Design	S3, S4, S5	Oversizing spaces and systems	✗	✗	✗							✗						✗				✗	✗			✗		4	4	3	3.6	
	9. Compartmentalization of Design 	Design	S4, S5	The building is divided into independent zones	✗		✗							✗										✗	✗			✗		4	3	2	3	
	10. Design for a Mixed Use (Multifunctionality) 	Design	S5	The building includes and can accommodate different function	✗									✗		✗		✗				✗	✗	✗	✗			✗		5	3	2	3.3	
	11. Utilization of Secondary (Reused/Recycled) Materials 	Design	S4, S5, S6	Using second hand furniture							✗		✗	✗		✗				✗	✗		✗	✗	✗	✗	✗	✗	✗	5	2	1	2.6	
	12. Utilization of Biobased (Biological) Materials 	Design	S3, S4, S5, S6	Using timber-based products							✗		✗	✗		✗				✗	✗	✗		✗				✗		4	3.5	2	3.1	
	13. Utilization of Circular (Reusable/Recyclable) Materials 	Design	S3, S4, S5, S6	Glass panels can be reused and recycled at the end of their use							✗			✗	✗	✗	✗			✗	✗	✗		✗	✗			✗		5	3.5	2	3.5	
	14. Alignment of the Interconnection Between the Floor Plans 	Design	S5	Horizontal zones are vertically coordinated with other zones through circulation means		✗								✗													✗			3	3	4	3.3	
	15. Alignment of the Building Design with the Real Estate Strategy 	Design	S5	The building horizontal zones are coordinated with other zones				✗						✗				✗												4	4	5	4.3	
Legend				Literature-Based Strategy/Factor			Literature- and Practice-Based Strategy/Factor			Practice-Based Strategy/Factor			CO-Creation-Based Strategy/Factor			Co-Creation-Based  Linking			Theory-Practice-Based  Linking															

Figure 1: The revised framework for circular and adaptable building transformation

Strategies for Circular Building Adaptability in Adaptive Reuse		Phase to implement	Related Layer(s)	Examples	Determinants of Circular Building Adaptability													Enabling and Inhibiting Factors													Evaluation of the Strategies			
					Adaptability Determinants			Interrelated Determinants			Circularity Determinants			Enabling Factors										Inhibiting Factors										
					Functional Convertibility	Volume Scalability	Asset Refit-Ability	Configuration Flexibility	Product Demountability	Asset Multi-Usability	Design Regularity	Material Reversibility	Building Maintainability	Resource Recovery	The building Characteristics	Collaboration & Partnership/Industrial Symbiosis	Presence of Motivated/Capable Team	Economic Feasibility of Basic Strategies	New Business Models	Policy/Legislative Support	Enabling/Digital Technologies	Location of the Project	Quality and Performance Certification	Social Acceptance	Lack of Expertise	Technical Complexities with Building Products/Materials	Economic Infeasibility of Innovative Strategies	Tendency to Follow Traditional Paradigms	Lack of Data and Warranty on Old Materials	Legal and Legislative Restrictions	Fragmentation of the Building Industry			
Active Strategies	16. Utilization of Adjustable Building Products to Users	Design and use	S4, S5, S6	Folding walls and adjustable office desks		✗		✗						✗									✗	✗				✗	4	4.5	3	3.8		
	17. Utilization of Dismountable Building Components	Design and Use	S4, S5, S6	Demountable walls and cubicles		✗	✗	✗	✗			✗		✗	✗								✗	✗			✗	✗	5	4.5	4.5	4.6		
	18. Provision of Shareable Spaces	Design and Use	S5	Shareable meeting rooms, shareable kitchens and shareable lounge						✗				✗			✗		✗					✗			✗		3	3	5	3.6		
	19. Utilization of Renewable Energy Technologies	Design and Use	S3, S4	PV panels and PVT panels								✗	✗		✗			✗	✗	✗	✗			✗					3	5	5	4.3		
	20. Enabling the Use of Natural Lighting/Ventilation	Design and Use	S3, S4	Windows are accessible and can ease the use of natural lighting and ventilation								✗	✗							✗				✗					4	3	4	3.6		
	21. Utilization of Flexible and Integrated Installations (e.g. Integrated MEPs, Plug-and-Play)	Design and Use	S4, S5	Integrated wall partitions that bring together different systems (e.g. acoustical insulations and electric connections)			✗	✗			✗												✗	✗				✗	4	5	5	4.6		
	22. Utilization of Water Recovery System	Design and Use	S4	Using system that collects and treats the used water to be used for other purposes								✗								✗			✗	✗				✗	5	3	4	4		
Legend					Literature-Based Strategy/Factor			Literature- and Practice-Based Strategy/Factor			Practice-Based Strategy/Factor			CO-Creation-Based Strategy/Factor			Co-Creation-Based Linking			Theory-Practice-Based Linking														

Figure 1: The revised framework for circular and adaptable building transformation (continue)

Strategies for Circular Building Adaptability in Adaptive Reuse		Phase to implement	Related Layer(s)	Examples	Determinants of Circular Building Adaptability										Enabling and Inhibiting Factors														Evaluation of the Strategies						
					Adaptability Determinants			Interrelated Determinants			Circularity Determinants				Enabling Factors										Inhibiting Factors				Evaluation of the Strategies						
					 Functional Convertibility	 Volume Scalability	 Asset Refit-Ability	 Configuration Flexibility	 Product Demountability	 Asset Multi-Usability	 Design Regularity	 Material Reversibility	 Building Maintainability	 Resource Recovery	 The building Characteristics	 Collaboration & Partnership/Industrial Symbiosis	 Presence of Motivated/Capable Team	 Economic Feasibility of Basic Strategies	 New Business Models	 Policy/Legislative Support	 Enabling/Digital Technologies	 Location of the Project	 Quality and Performance Certification	 Social Acceptance	 Lack of Expertise	 Technical Complexities with Building Products/Materials	 Economic Infeasibility of Innovative Strategies	 Tendency to Follow Traditional Paradigms	 Lack of Data and Warranty on Old Materials	 Legal and Legislative Restrictions	 Fragmentation of the Building Industry	 Effectiveness of the Strategy in Promoting CBA	 Applicability in Practice (e.g. Constructability)	 Economic Feasibility	 Over all Score (Average)
Operational Strategies	23. Provision of Shareable Facilities 	Design and Use	S4, S5, S6	Shareable office machines						✗					✗			✗	✗	✗	✗			✗								5	5	5	5
	24. Application of (or update of) Material Passports 	Design, Use Construction	S3, S4, S5, S6	Recording the performance and properties of all used products					✗			✗	✗	✗				✗		✗		✗	✗	✗	✗	✗	✗	✗	✗	✗	5	5	3	4.3	
	25. Procurement of the Service of Building Products 	Design and Use	S3, S4, S5, S6	Leasing elevators, lightings, façade, or fit outs as a service			✗			✗		✗	✗			✗													✗	4	2.5	2	2.8		
	26. Selective Dismantling 	Design, Use Construction	S4, S5, S6	Removing old walls, part by part, to avoid inflicting damage							✗		✗	✗		✗	✗				✗	✗	✗	✗	✗	✗	✗				5	2	2.5	3.2	
	27. Send Back Discarded Material for Reuse/Recycling 	Design, Use Construction	S3, S4, S5, S6	Send back decorticated ceiling tiles for recycling or reuse							✗		✗	✗		✗	✗			✗	✗	✗	✗	✗	✗	✗	✗				5	4	3	4	
	28. Repurpose Old Building Materials/Products 	Design and Construction	S4, S5, S6	Repurposing old timber in other forms of finishes							✗		✗	✗		✗	✗			✗	✗		✗	✗	✗	✗	✗				5	4	2	3.6	
	29. Product Exchange 	Design	S4, S5, S6	Exchanging old products with providers of second hand products						✗		✗		✗	✗		✗	✗	✗	✗	✗		✗	✗	✗	✗	✗				5	2	3	3.3	
	30. Implementation of Proactive/Predictive Maintenance 	Use	S3, S4, S5	Repurposing old timber in other forms of finishes								✗				✗		✗				✗		✗		✗					4	4.5	3	3.8	
	31. Repair of Old Building Components 	Design and Construction	S3, S4, S5	Implementation of a proactive maintenance of the MEP systems							✗				✗		✗				✗	✗			✗						4.5	4	4	4.2	
	32. Preservation of Monumental/Old Parts	Design and Construction	S3, S4, S5	Preservation of monumental finishes, doors and windows							✗	✗		✗	✗								✗	✗		✗	✗				4.5	5	2	3.8	
33. Utilization of Rented-Second-Hand Products 	Design and Use	S5, S6	Leasing second hand office fit outs				✗			✗				✗	✗		✗									✗	✗	✗	4.5	2	3.5	3.3			

Legend	Literature-Based Strategy/Factor	Literature- and Practice-Based Strategy/Factor	Practice-Based Strategy/Factor	CO-Creation-Based Strategy/Factor	Co-Creation-Based Linking	Theory-Practice-Based Linking
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Legend

Literature-Based Strategy/Factor

Literature- and Practice-Based Strategy/Factor

Practice-Based Strategy/Factor

CO-Creation-Based Strategy/Factor

Co-Creation-Based Linking

Theory-Practice-Based Linking

Figure 1: The revised framework for circular and adaptable building transformation (continue)

Summary of outcomes of workshop 2 for the case project





























Strategies for Circular Building Adaptability in Adaptive Reuse		Phase to implement	Related Layer(s)	Examples	Determinants of Circular Building Adaptability									YES/NO				
					Adaptability Determinants			Interrelated Determinants			Circularity Determinants							
					 Functional Convertibility	 Volume Scalability	 Asset Refit-Ability	 Configuration Flexibility	 Product Demountability	 Asset Multi-Usability	 Design Regularity	 Material Reversibility	 Building Maintainability					
Passive Strategies	1. Design Standardization 	Design	S4, S5, S6	Consisted use of walls, doors and windows				✗	✗		✗							
	2. Separation of the Building Layers (e.g. Separated Walls) 	Design	S3, S4, S5, S6	Partitions are independents connected by dry connections		✗		✗	✗									
	3. Open the Floor Plan 	Design	S5	Open office space		✗		✗										
	4. Provision of Multi-Purpose Spaces 	Design	S5	Spaces that can be used as offices and meeting rooms						✗								
	5. Modularization of Spatial Configuration (Layout) 	Design	S4, S5	Unitized and repetitive pattern of rooms	✗						✗							
	6. Utilization of Standardized Building Products 	Design	S4, S5, S6	Unitized and repetitive pattern of rooms							✗	✗						
	7. Provision of a Core for Building Services 	Design	S5	Central area providing an elevator and a shaft	✗													
	8. Design for Surplus Capacity 	Design	S3, S4, S5	Oversizing spaces and systems	✗	✗	✗											
	9. Compartmentalization of Design 	Design	S4, S5	The building is divided into independent zones	✗		✗											
	10. Design for a Mixed Use (Multifunctionality) 	Design	S5	The building includes and can accommodate different function	✗													
	11. Utilization of Secondary (Reused/Recycled) Materials 	Design	S4, S5, S6	Using second hand furniture								✗		✗				
	12. Utilization of Biobased (Biological) Materials 	Design	S3, S4, S5, S6	Using timber-based products								✗		✗				
	13. Utilization of Circular (Reusable/Recyclable) Materials 	Design	S3, S4, S5, S6	Glass panels can be reused and recycled at the end of their use								✗						
	14. Alignment of the Interconnection Between the Floor Plans 	Design	S5	Horizontal zones are vertically coordinated with other zones through circulation means		✗												
	15. Alignment of the Building Design with the Real Estate Strategy 	Design	S5	The building horizontal zones are coordinated with other zones				✗										

Figure 2: A tool for exploring, determining, assessing, and reporting the promotion of CBA in adaptive reuse projects

Summary of outcomes of workshop 2 for the case project
























Strategies for Circular Building Adaptability in Adaptive Reuse				Phase to implement	Related Layer(s)	Examples	Determinants of Circular Building Adaptability										YES/NO				
Adaptability Determinants			Interrelated Determinants				Circularity Determinants														
																					
Functional Convertibility	Volume Scalability	Asset Refit-Ability	Configuration Flexibility	Product Demountability	Asset Multi-Usability	Design Regularity	Material Reversibility	Building Maintainability	Resource Recovery												
16. Utilization of Adjustable Building Products to Users 	Design and use	S4, S5, S6	Folding walls and adjustable office desks		✗		✗														
17. Utilization of Dismountable Building Components 	Design and Use	S4, S5, S6	Demountable walls and cubicles		✗	✗	✗	✗			✗										
18. Provision of Shareable Spaces 	Design and Use	S5	Shareable meeting rooms, shareable kitchens and shareable lounge						✗												
19. Utilization of Renewable Energy Technologies 	Design and Use	S3, S4	PV panels and PVT panels									✗									
20. Enabling the Use of Natural Lighting/Ventilation 	Design and Use	S3, S4	Windows are accessible and can ease the use of natural lighting and ventilation									✗									
21. Utilization of Flexible and Integrated Installations (e.g. Integrated MEPs, Plug-and-Play) 	Design and Use	S4, S5	Integrated wall partitions that bring together different systems (e.g. acoustical insulations and electric connections)			✗	✗			✗											
22. Utilization of Water Recovery System 	Design and Use	S4	Using system that collects and treats the used water to be used for other purposes									✗									

Figure 2: A tool for exploring, determining, assessing, and reporting the promotion of CBA in adaptive reuse projects

Summary of outcomes of workshop 2 for the case project













































Strategies for Circular Building Adaptability in Adaptive Reuse		Phase to implement	Related Layer(s)	Examples	Determinants of Circular Building Adaptability										YES/ NO	 S3. Skin	 S4. Services	 S5. Space	 S6. Stuff
					Adaptability Determinants			Interrelated Determinants			Circularity Determinants								
					 Functional Convertibility	 Volume Scalability	 Asset Refit-Ability	 Configuration Flexibility	 Product Demountability	 Asset Multi-Usability	 Design Regularity	 Material Reversibility	 Building Maintainability	 Resource Recovery					
Operational Strategies	23. Provision of Shareable Facilities 	Design and Use	S4, S5, S6	Shareable office machines															
	24. Application of (or update of) Material Passports 	Design, Use Construction	S3, S4, S5, S6	Recording the performance and properties of all used products															
	25. Procurement of the Service of Building Products 	Design and Use	S3, S4, S5, S6	Leasing elevators, lightings, façade, or fit outs as a service															
	26. Selective Dismantling 	Design, Use Construction	S4, S5, S6	Removing old walls, part by part, to avoid inflicting damage															
	27. Send Back Discarded Material for Reuse/Recycling 	Design, Use Construction	S3, S4, S5, S6	Send back decorticated ceiling tiles for recycling or reuse															
	28. Repurpose Old Building Materials/Products 	Design and Construction	S4, S5, S6	Repurposing old timber in other forms of finishes															
	29. Product Exchange 	Design	S4, S5, S6	Exchanging old products with providers of second hand products															
	30. Implementation of Proactive/Predictive Maintenance 	Use	S3, S4, S5	Repurposing old timber in other forms of finishes															
	31. Repair of Old Building Components 	Design and Construction	S3, S4, S5	Implementation of a proactive maintenance of the MEP systems															
	32. Preservation of Monumental/Old Parts 	Design and Construction	S3, S4, S5	Preservation of monumental finishes, doors and windows															
33. Utilization of Rented-Second-Hand Products 	Design and Use	S5, S6	Leasing second hand office fit outs																

Figure 2: A tool for exploring, determining, assessing, and reporting the promotion of CBA in adaptive reuse projects

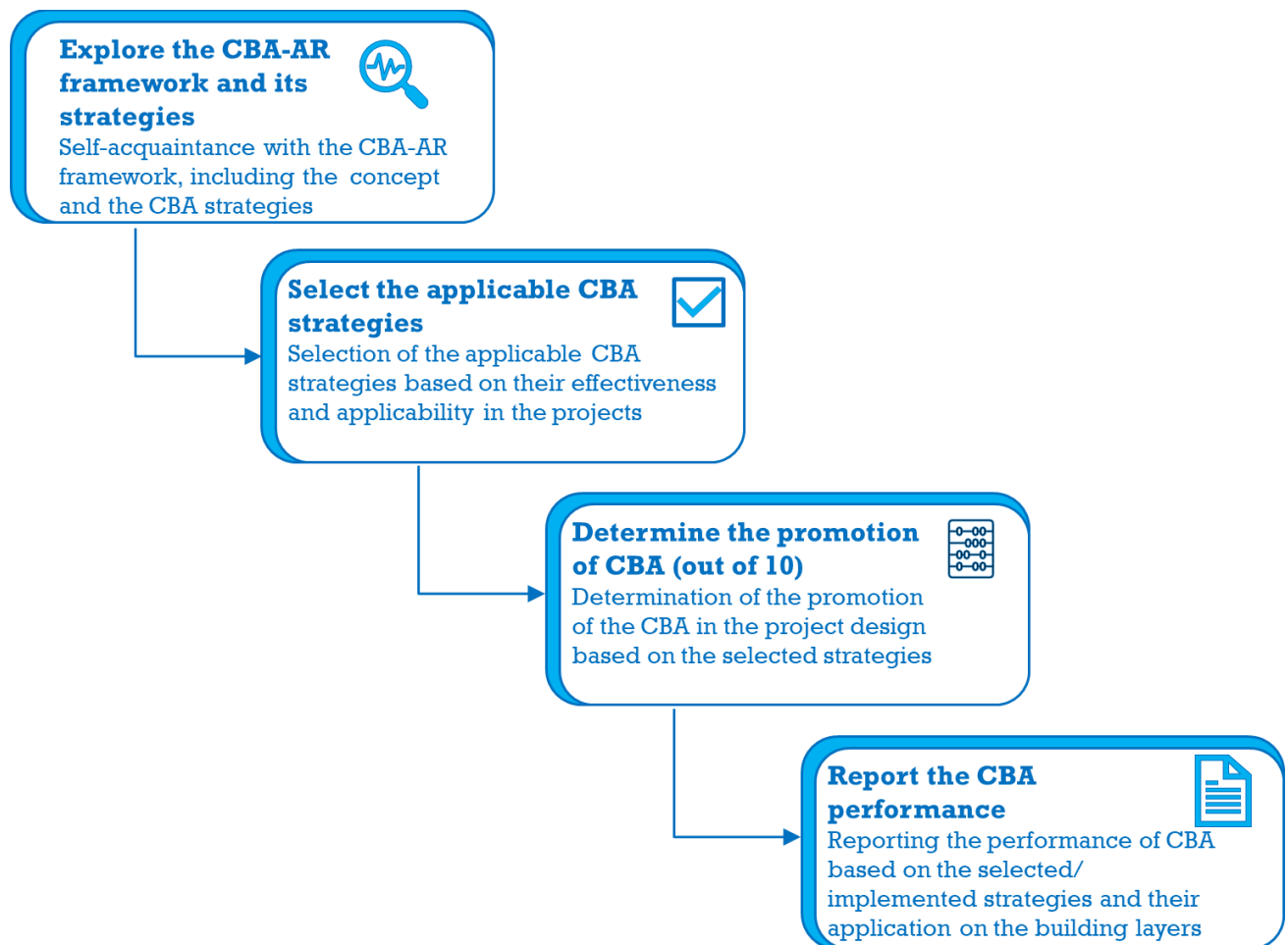


Figure 3: A proposed 4-stepwise approach for using the CBA-AR framework as a guiding, assessment, and reporting tool

2. Key outcomes of the workshop

2.1 Reflection on the 12 possible CBA strategies for the case project

Following is a summary and discussion of the reflection on the 12 CBA strategies that were perceived as possible in workshop 1:

S11. Utilization of secondary (reused/recycled) materials/products

In addition to the possibility of using second-hand office fit-outs in part of the project, the glass of the wall partitions that will be reused in the project might be provided by Verwol – the considered contactor for the interior works – as a second-hand material.

Second-hand office fit-outs will be only possible on the ground and first floor, especially in the hall.

Based on the discussion, the phrase “products” was incorporated into the name of the strategy.

There was a discussion on the possibility of using reusable or reused pantries, based on the circular kitchen project. It was recommended to use secondary products for the pantries if they are limited in the project.

S13. Utilization of reusable/recyclable materials/products

Because of the developer's focus on reusing the existing assets as much as possible and the uncertainty about the regulations and standards, there has been little attention to the use of reusable and recyclable products or materials in the project.

It was concluded that providing architects with the freedom to create and innovate can pave the way for finding reuse-oriented solutions.

Based on the discussion, the phrase “products” was incorporated into the name of this strategy.

S16. Utilization of adjustable building components/products

Due to the applicable acoustical requirements in the Netherlands, the use of folding walls – as a kind of adjustable component – has been seen as challenging in offices. However, adjustable cubicles are seen as a possible solution.

Based on the discussion, the phrase “products” was incorporated into the name of the strategy as well.

S17. Utilization of dismountable building components

The partitions will be demountable in the project, for both the reused and new ones. Gypsum walls with metal studs (the old partitions in the building) will be reused on the second and third floors, where demountable wooden walls on the ground floor (the new partitions). Therefore, an alignment between using reusable components and reusing old components is being done in the project

S19. Utilization of renewable energy technologies

A calculation of the number of required PV panels was still being made by a specialist, and a search for a corporation that can finance the provision of PV is still in progress. Limitations with the project budget have been a barrier to investing in PV panels.

S21. Utilization of flexible and integrated building installations

Using plug-and-play office booths that bring together different systems has been challenging due to the fire safety requirements (sprinklers) and thermal comfort (mechanical ventilation). In conclusion, this strategy is impossible in the project, due to the difficulty of satisfying IEQ and fire safety requirements.

S25. Procurement of the service of building products

Still, this strategy is under consideration for the elevator, but further search for different providers is necessary. Leasing the interior walls was proposed as an option, but it has been seen as a potentially costly investment. In this regard, Bob Geldermans's thesis was proposed as a worthwhile study to look up. The development model was seen as an impotent perspective that affects procuring building products as a service.

Adding leasable lights to the strategy description in the framework was recommended.

Searching for providers of leasable sprinklers was seen as possible for the case project.

S27. Send back discarded material for reuse/recycling

The glass from the façade has already been sent for reuse in another project. Lighting fixtures and ceiling tiles are being considered to be sent for reuse.

S28. Repurpose old building materials/products

Repurposing original lights into LED will be carried out. Other furniture items, such as the vaults, might be repurposed as well afterward.

It was concluded that the cost of reusing elements, just for the sake of reuse, should be valued in terms of added value, both economically and intrinsically from the perspective of preserving cultural heritage.

S29. Products exchange

This strategy has been perceived as difficult to implement because the project is not large enough. It was also concluded that this strategy is time- and produce-specific. However, there might be some sort of product exchange within the developing agency (BOEi) after deciding on the products that will be reused.

S31. Repair of old building components/systems

Based on the discussion, the phrase “systems” was incorporated into the name of this strategy.

This strategy has been considered to be implemented in various building systems and components, including radiators, skylights, some of the wiring channels, and wall panels

S33. Utilization of rented-second-hand products

This strategy was previously proposed to be implemented in the office fit-outs; however, it has been concluded that it is not feasible anymore because of quality- and cost-related reasons by simply comparing these criteria with the case of leasing new office fit-outs.

2.2 Reflection on the carried out improvements on the CBA-AR framework

The compiled booklet was seen as a useful descriptive and prescriptive guide. The added examples were appreciated.

Other improvements were proposed, namely:

- Simplifying the figure showing the framework layout.
- Highlighting the irrelevant layers in the worksheet (**Figure 2**).
- Translating the CBA-AR framework to Dutch, and digitizing the framework.
- Mapping the 10 R-strategies to the CBA strategies.

The framework was perceived as an inspiring tool by the developing manager as it has provided new ideas and insights.

3. General remarks and comments

Following is a list of comments that were given by the participants at the end of the workshop:

- Adding the 10 R-strategies (e.g. reuse, reduce, etc.) and mapping them to the CB strategies.
- Knowing the promotion of the 10 determinants and the other possible outcomes of the strategies can be used as measuring indicators.
- The framework, as a qualitative tool, has been deemed to be useful as a guiding, assessment, and reporting tool in line with the EU taxonomy elements. However, the framework cannot be used as a performance measurement tool.
- Translating the framework into a card game might be useful in the future.

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