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Operationalising the HUL Tools at Building Level: Circular Models of Adaptive Reuse

Deniz Ikiz Kaya[1§*], Lu Lu[1§], Nadia Pintossi[1], Ana Pereira Roders[2]

* Corresponding author
§ These authors contributed equally to this work
1 Eindhoven University of Technology, The Netherlands, d.ikiz.kaya@tue.nl
2 Delft University of Technology, The Netherlands

Abstract

Adaptive reuse of historic buildings plays a significant role in the transition towards circular economy. The existing literature still regards heritage conservation, urban management, circular economy and sustainable development as different spheres of knowledge. The Recommendation on the Historic Urban Landscape (HUL) provides a holistic approach to integrate these spheres, along with a supplementary toolkit. However, its implementation is still sporadic, not fully aligned with the circular economy framework, and unframed in the adaptive reuse and regeneration policies and practices at local level. The aim of this paper is thus to provide a framework to investigate how the HUL approach and tools are operationalised at building level, bridging the gap between international policy documents, global aspirations circular economy, and local practices of adaptive reuse. For this, the circular models of adaptive reuse in terms of governance and decision-making structures, and environmental strategies are identified through a case study analysis of best practice: the Pakhuis de Zwijger (PdZ) case in Amsterdam. Focus group meetings have been conducted with internal and external local stakeholders of PdZ to formulate their governance model, and four levels of sustainable governance actors are identified. Then, their decision-making process is mapped, and the newly adopted sustainability measures are analysed. These circular models and strategies at building level are then aligned with the broader HUL toolkit.In this context, this paper contributes to the operationalization of HUL tools at building level, supporting the strengthening of efforts for the protection of world's cultural heritage (UN SDG 11.4) and reduction of waste generation through reuse (UN SDG 12.5)The identification and assessment of circular administrative and environmental models of adaptive reuse incorporates circular economy strategies and tools into the HUL framework.

Keywords

Historic urban landscape approach, circular models, adaptive reuse, governance, decision-making, sustainability, Pakhuis de Zwijger

1 INTRODUCTION

Cultural heritage is a driver for sustainable development in cities. The reuse of abandoned and underused cultural heritage buildings and sites is a practical substitute to demolition, bypassing the wasteful processes of demolition and new construction prolonging the cultural heritage lifespan. Adaptive reuse of cultural heritage can thus be instrumental to circularise the flows of energy, raw-materials, human and cultural capital, and hence plays a significant role in the transition towards circular economy.

According to the ICOMOS Burra Charter (2013), the goal of adaptive reuse of historic buildings is to sustain the value of a building to a place or community while ensuring its future usefulness. The UNESCO Recommendation on the Historic Urban Landscape (2011) also adopts a "conservation through transformation" approach, which aims to conserve the historic-cultural and social values of cultural heritage, engaging local communities and stakeholders in conservation, transformation and

adaptation choices. The HUL approach thus aligns with the global and urban aspirations of circular economy and sustainable development.

The HUL Recommendation provides an interdisciplinary and holistic approach, along with a set of six critical steps and a continually evolving toolkit that is classified under four categories of toolsincluding: civic engagement tools, knowledge and planning tools, regulatory systems, and financial tools (UNESCO, 2011). It has been further underlined in the HUL Guidebook (WHITRAP and City of Ballarat, 2016) that the HUL Toolkit provides an ever-expanding set of innovative and multi-disciplinary tools, policies and actions that have to be adapted for local application for the successful incorporation of urban heritage management into the wider goals of sustainable development.

However the implementation of this holistic approach, application steps and suggested tools is still sporadic, not fully aligned with the circular economy framework, and unframed in the adaptive reuse and regeneration policies and practices at local level. The aim of this paper is thus to provide a framework to investigate how the HUL approach and tools are operationalised at building level, bridging the gap between international policy documents, global and urban aspirations of promoting circular economy, and local practices of adaptive reuse at building scale. For this, the circular models of adaptive reuse in terms of governance and decision-making structures, and environmental strategies will be identified through a case study analysis of best practice. The Pakhuis de Zwijger (PdZ) case in Amsterdam is selected as a successful case of sustainable and circular processes of cultural heritage adaptive reuse. Stakeholder engagement workshops and focus groups have been conducted with internal and external stakeholders of PdZ to better understand its governance structure, analyse its existing decision-making mechanism, and to reach consensus on circular environmental strategies to minimize their environmental impacts.

In this respect, this paper contributes to the operationalization of HUL tools at building level through the testing of their adaptability to different scales, and identification of circular models of adaptive reuse that can be complementary to the toolkit. The identification and assessment of innovative circular governance, environmental and business models of adaptive reuse contributes to the alignment of circular economy strategies and tools with the HUL framework, which have not yet been applied in recent HUL initiatives and guidelines.

2 METHODOLOGY

For this research, a case study analysis on circularity of cultural heritage adaptive reuse is conducted, where the Pakhuis de Zwijger Foundation in Amsterdam is selected as a best practice. The PdZ Foundation is a partner of the ongoing Circular Amsterdam initiatives, and a leading case example in Europe of reuse for community purposes practices. This case assessment is conducted as part of the "Circular models leveraging investments in Cultural Heritage Adaptive Reuse" project (CLIC project), the European Horizon 2020 Research and Innovation Action programme framing this study.

For identifying the currently operating governance model of PdZ, interviews and focus group meetings are conducted with the relevant internal and external stakeholders of the Foundation. Following an interview with the managerial unit of the organization to identify the objective of the focus group meeting, all the potentially involved stakeholders of the Foundation are identified. Then, we reached an agreement on three objectives of the focus group meeting: (1) to map the governance model, with focus on how the initiative of the individual users can affect the operation of PdZ and

decision-making; (2) to outline the ambition of PdZ in the area of sustainability; and (3) to identify the sustainability measures to undertake in the near future. Two focus group meetings are thus held with the internal (in-house) and external stakeholders of the Foundation to achieve these goals.

The data gathered is then analysed through a mixed methodology of qualitative data analysis. Initially, four levels of governance actors are identified, and their decision-making process is analysed and mapped based on the exemplary case of how solar panels were installed. Then, their newly adopted sustainability measures are analysed as circular environmental strategies (Foster, 2019). These circular models and strategies at building level are then aligned with the broader HUL toolkit, particularly the regulatory systems and citizen engagement tools.

3 CASE STUDY: CIRCULAR GOVERNANCE MODEL AND ENVIRONMENTAL STRATEGIES OF ADAPTIVE REUSE – PAKHUIS DE ZWIJGER

3.1 CASE INTRODUCTION

Pakhuis de Zwijger Foundation is accommodated in a former cooling warehouse located in Eastern Docklands area of Amsterdam, currently functioning as a cultural communal centre and a public debate house. Constructed in 1933-34, the refrigerated warehouse was part of a continuous row of cold-storage warehouses along the inner harbour of Amsterdam. The building was designed by the principles and influence of the Nieuwe Bouwen (Dutch Modernism) period, representative of the style with its externally visible reinforced concrete structure, consisting of mushroom columns supporting cantilevered upper floors (Architectenbureau J. van Stigt B.V.,n.d.).

Functioning in good use until 1970s, the warehouse building became redundant after the abandonment of the dockyard in 1980s. Having laid vacant for numerous years, the building was squatted to be used for informal cultural activities until the late 1990s. When the city administration decided to give a new use for the building in 1997, they gave the squatting organisations to continue their cultural activities commercially through joining forces with grassroots initiatives to protect the building (Pakhuis de Zwijger, n.d.). In 2000, however, the City of Amsterdam approved a new development plan to connect the city center with the new residential neighbourhood located in the artificial Java island right across the building by demolishing the former warehouse and building a bridge instead. Following designation and listing of the building as a National Monument in 2001 with the initiative of the Royal Institute of Dutch Architects and the local grassroot organisations, an alternative solution was adopted through the removal of part of the first floor to leave room for the bridge and protection of the structural and physical integrity of the building.

The new renovation and reuse project was developed with the building owner, Stadsherstel Amsterdam – limited shareholder company for architectural restoration–, the project architectural group, Van Stigt, the project developers, the municipality and the involved cultural organisations as the future users. This inclusive and participatory approach in planning and project development phases were sustained in the funding of the project and its future operation where the Stadsherstel, Monumentenfonds (Monument conservation fund), and the De Zwijger Foundation under which diverse cultural organisations and creative industries are organised as future users collaborated. The building was inaugurated as Pakhuis de Zwijger, a cultural centre and public debate house where debates on urban-related topics are held weekly.

3.2 GOVERNANCE MODEL AND DECISION-MAKING PROCESS

For the better understanding and assessment of the governance model, the decision-making process and the involvement of relevant actors in PdZ, a specific action is further examined as a case example. This case is selected to be the installation of solar panels on the PdZ building. This action was taken both to improve the environmental sustainability and to save energy of the building as part of the adaptive reuse process. A two-tier decision-making process allowing communication two ways, supported effective decision-making to cope with the sustainability strategies and install the photovoltaic panels.

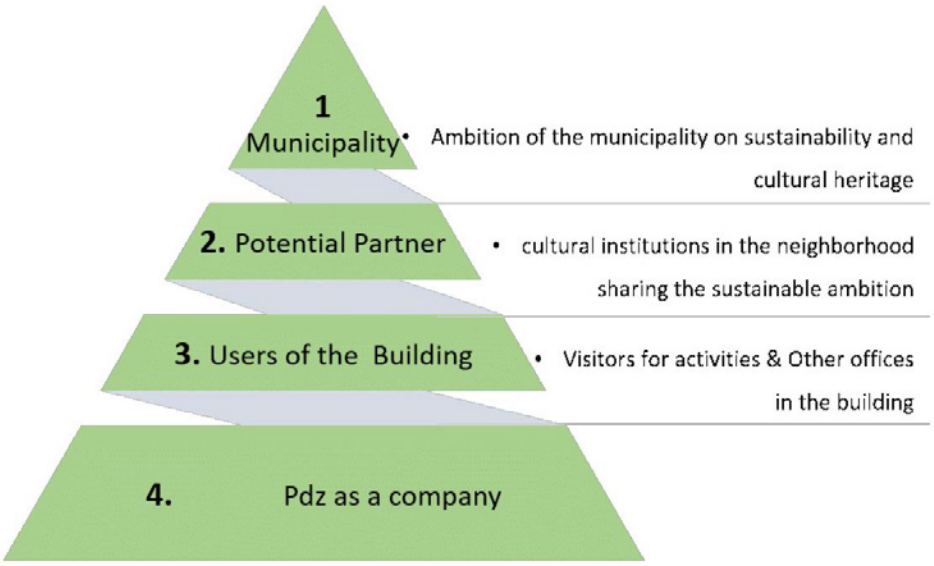

FIG. 1 Four Levels of governance relating to sustainability actions. Source: Ikiz Kaya, Lu, Pintossi & Pereira Roders, 2020

Based on the data collected through interviews, a four-levelled governance model (Fig. 1) is identified that operates the decision-making structure regarding sustainability and building management activities. These four levels include: the PdZ as the operating company, the users of the building that involves visitors for activities and other offices renting the shared space in the building, cultural institutions in the neighbourhood sharing the sustainability goals, and the municipality seated at the top with policy-making responsibilities on sustainability and cultural heritage topics. Within PdZ, the internal governance model related to decision-making for sustainable operation functions both bottom-up and top-down. This duality of decision-making structures is identified to be effective by internal stakeholders, as discussed during the internal focus group meeting. The empowerment of building users to initiate the action plan, however, is identified to be limited and supervised (Fig. 2).

FIG. 2 The internal governance model for decision-making regarding the sustainability inside of Pakhuis de Zwijger.

This decision-making analysis also revealed how much public awareness and local policies regarding sustainability have impact on the decision-making towards sustainable development. Installing solar panels on PdZ was initially introduced by the property owner, Stadsherstel. This decision was incentivized by the pressure of the different groups, such as the visitors' curiosity on sustainable and energy-efficient buildings and the property users' interests in saving energy and sustainability. Besides, the newly adopted national Climate Agreement and green policy in Amsterdam also urged Stadsherstel to initiate actions for sustainable adaptive reuse as property owners of several historical buildings in Amsterdam. PdZ is selected to be a sustainable action precedent practice on a heritage building since it is an NGO and a public building. The culture of land use benefits the proceeding of the solar panel installation.

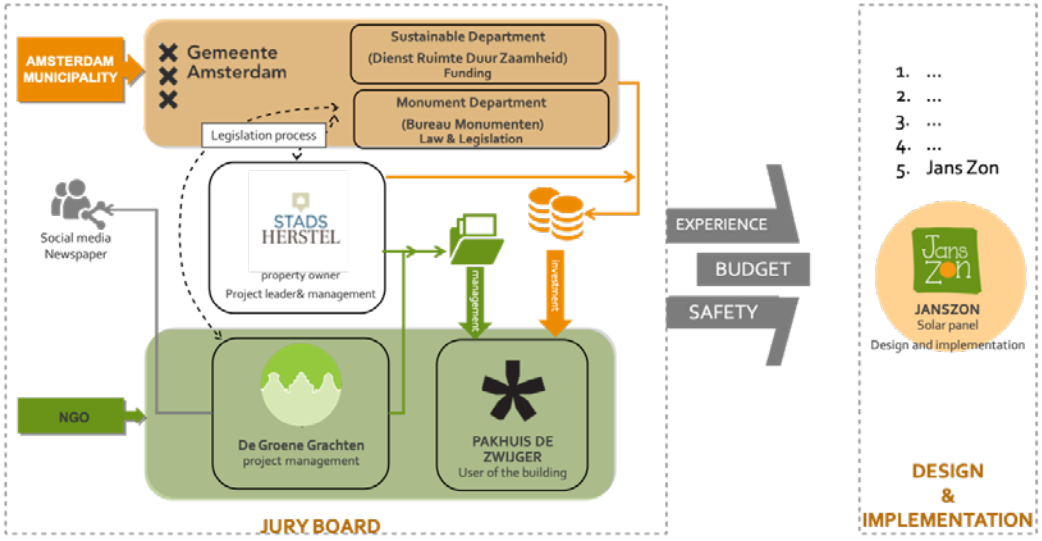

FIG. 3 Decision of Solar panel installation on Pakhuis de Zwijger. Source: Adapted from Heijns & Lu, 2019

Regarding the process of the solar panel installation, the main stakeholders involved in the decision-making have been the municipality, property owner, project management, property user and designer who implements the solar panels. De Groene Grachten, a consultant NGO in the sustainability of historic buildings, together with Amsterdam Stadsherstel have been in charge of the project management. For PdZ, they achieved an agreement with the Amsterdam Monument Department (Bureau monumenten) on the exemption to install solar panels on Pdz's rooftop. Besides project management, De Groene Grachten has also been in charge of communication activities. The sustainable department of Amsterdam municipality (Dienst Ruimte en Duurzaamheid) and Stadsherstel have been the main investors of this project. Company Jans Zon, as the solar panel designer and installer, was selected by the stakeholders among the five competitors. This selection/ choice considered their experience, budget, and safety. Fig. 3 illustrates how the decision-making process for the solar panel installation took place.

3.3 ENVIRONMENTAL STRATEGIES

For data collection on the sustainable environmental strategies of the PdZ, we scheduled two levels of stakeholders' meetings: internal and external. The internal stakeholders involve all the heads of departments within the organization, such as the business director, catering and sustainability team. External stakeholders are the remaining three levels of actors identified in the governance model (Fig. 1) Therefore these external stakeholders represent the municipality, potential partners, the users of the building. A total of 31 measures were identified as environmental strategies during the stakeholders' meeting, contributing to a sustainable governance model and operation of PdZ (Figure 4). These included easy-to-implement measures, such as rechargeable batteries in the microphones, to more fundamental and costly measures.

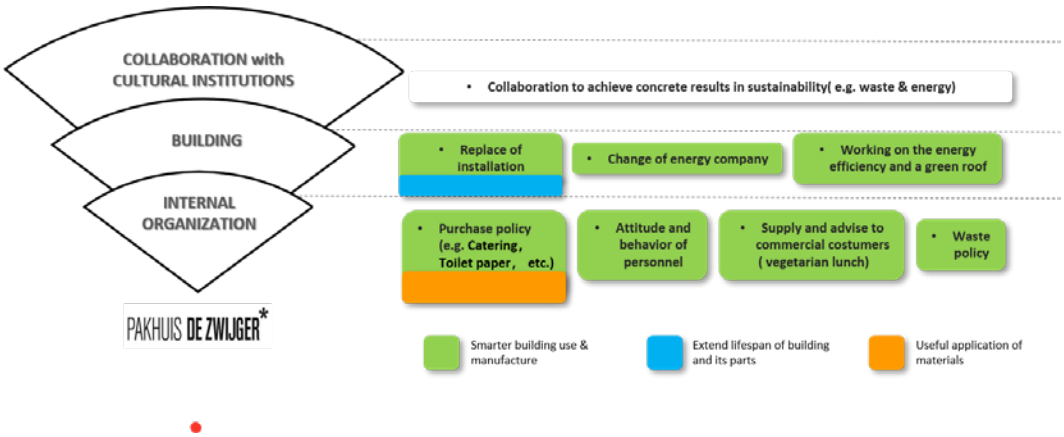

FIG. 4 31 measures of sustainability adopted by the PdZ in three levels and the decision-making process. Source: Ikiz Kaya, Lu, Pintossi & Pereira Roders, 2020

These 31 sustainability measures of PdZ are aimed to be applied at three levels. These three levels were identified during the interview, contributing to achieving effective communication in the stakeholders' meeting. The first level is relevant to the Foundation's operation, for example, the purchase policy, personal attitude and behaviour, supply and advice to commercial consumers and waste policy. The second level is about the invisible and visible measures having a direct impact on the building. The main consideration is energy efficiency and costs. They would like to

introduce sustainable evaluation tools to monitor the performance of the building. The third level is a collaboration with cultural institutions to achieve concrete results in sustainability, which is an innovative action to enhance circularity at neighbourhood level.

In the framework built for circular economy strategies to adaptive reuse of buildings to reduce environmental impact, the sustainability measures agreed upon and partially adopted by PdZ aligns with the "use and operate" phase of the building life cycle (Foster, 2020:12). In this phase, the historic building is challenged to continuously meet the needs of its users. Table 1, on page 322, illustrates the alignment between the 31 measures identified by PdZ and the environmental strategies developed by Foster (2020). Particularly, the majority (n=25) of these measures entails the highest degree of circularity according to the scale used to rank the strategies (Foster, 2020). In other words, these measures correspond to a "smarter building use and manufacture" (Foster, 2020:12). Conversely, among the remaining 6 measures, only 1 corresponds to an intermediate degree of circularity, namely "extend lifespan of building and its parts" (Foster, 2020:12) whereas 5 lack an alignment with the strategies. The measure entailing an intermediate degree of circularity is the hiring of the sustainable connector. About the alignment between measures and strategies, it is to note that 14 measures align with more than one strategy each. Therefore several measures entail a broader spectrum of impact. In addition, 11 measure align with one particular strategy: the one aiming at increasing the rate of reuse and recycling. When performing such comparison, a strategy was added to Foster's list. This strategy entails the reduction of waste production and it aligns with almost a third of the measures identified by PdZ.

4 DISCUSSION & CONCLUSION

Referring to the HUL toolkit, the participatory and circular governance model and decision-making process provide an exemplary best case practice for civic engagement, regulatory and knowledge and planning tools. In the definition of civic engagement tools provided by the HUL Recommendation (UNESCO, 2011), involvement of a diverse range of stakeholders, and their empowerment to develop visions and reaching consensus on actions are highly advocated. The existing decision-making mechanism operating in Pakhuis de Zwijger, as illustrated with the example of solar panel installation, manifests a best practice of civic and stakeholder engagement with its four level participatory governance model.

The use of planning tools to allow management of change in Historic Urban Landscapes, and adoption of certain measures to promote integrated conservation and sustainable development have also been introduced as methods and tools to enhance management of historic urban landscapes. Adopting this approach to a single building designated and protected under national legislation as a monument, the sustainability measures agreed by all the relevant stakeholders of PdZ demonstrate how these planning and regulatory tools can be implemented to enhance sustainability and circularity at building level. The alignment of these measures with the circular economy strategies for the built environment also sets example for enhancing circularity in adaptive reuse practices, and their incorporation into the wider framework as targeted by the HUL approach.

As Veldpaus and Bokhove (2019) point out in a comparative policy analysis conducted in Amsterdam in years 2014 and 2017, while the local administrators are informed and acknowledge the holistic approach introduced by the HUL Recommendation, the citywide implementation of this approach is not in their agenda. However, the contacted administrators also indicated that the approach itself

31 MEASURES OF PDZ	CIRCULAR ECONOMY STRATEGIES FOR ADAPTIVE REUSE OF CULTURAL HERITAGE BUILDINGS TO REDUCE ENVIRONMENTAL IMPACTS : "USE AND OPERATE" PHASE
1. Collecting coffee grounds	— Implement, incentive, and encourage users to achieve high rates of product reuse and recycling — Provide facilities for easy collection of recyclable materials and biomass for compost
2. Rechargeable batteries for wireless microphones	— Implement, incentive, and encourage users to achieve high rates of product reuse and recycling — Reduction of waste production
3. Cable mats instead of tape for cords	— Implement, incentive, and encourage users to achieve high rates of product reuse and recycling — Reduction of waste production
4. Giving office garbage to staff to take away on Friday	— Implement fee for service arrangements that reduce material inputs and incentivize longevity — Reduction of waste production
5. Paper tray in the communication department	— Implement, incentive, and encourage users to achieve high rates of product reuse and recycling — Provide facilities for easy collection of recyclable materials and biomass for compost
6. Waste-free groceries for lunch	— Implement fee for service arrangements that reduce material inputs and incentivize longevity — Reduction of waste production
7. Use whiteboard (instead of paper)	— Implement, incentive, and encourage users to achieve high rates of product reuse and recycling — Reduction of waste production
8. Apply waste separation to catering and café	— Implement, incentive, and encourage users to achieve high rates of product reuse and recycling — Provide facilities for easy collection of recyclable materials and biomass for compost
9. Less packaging (rewarding or addressing suppliers?)	— Implement fee for service arrangements that reduce material inputs and incentivize longevity — Reduction of waste production
10. Addressing customers on event waste (include disclaimer in offers)	— Implement fee for service arrangements that reduce material inputs and incentivize longevity — Reduction of waste production
11. Worm hotel on the square	— Create habitats for animals and insects — Improve land through pollutant remediation and / or increasing nutrients in soil
12. Placing other Java island projects in and around Pakhuis de Zwijger communication	Implement fee for service arrangements that reduce material inputs and incentivize longevity
13. External communication: what does Pakhuis de Zwijger do in the area of sustainability? What is our vision?	--
14. Inform tenants about our policy in the area of sustainability	Implement, incentive, and encourage users to achieve high rates of product reuse and recycling
15. Sustainable website (like De Correspondent)	--

31 MEASURES OF PDZ	CIRCULAR ECONOMY STRATEGIES FOR ADAPTIVE REUSE OF CULTURAL HERITAGE BUILDINGS TO REDUCE ENVIRONMENTAL IMPACTS : "USE AND OPERATE" PHASE
16. Internal communication: exchange information on what is already being done with sustainability, understanding and awareness.	Implement, incentive, and encourage users to achieve high rates of product reuse and recycling
17. Make sustainable procurement policy mandatory for all departments	Implement, incentive, and encourage users to achieve high rates of product reuse and recycling
18. Sustainable cleaning equipment	
19. Making sustainable choices when choosing suppliers	Implement, incentive, and encourage users to achieve high rates of product reuse and recycling
20. Collaboration with Tres Hombres	Strive to increase proportion of purchased and produced renewable energy whilst phasing out fossil fuels
21. Buy less printed materials / flyers	— Implement fee for service arrangements that reduce material inputs and incentivize longevity — Reduction of waste production
22. Less dairy at the office lunch	--
23. After completion of programmes: turn off air treatment	Implement ongoing energy efficiency strategy
24. More efficient beamers	Implement ongoing energy efficiency strategy
25. LED lighting for halls	Implement ongoing energy efficiency strategy
26. Cooperation with Philips for lighting (sponsor)	— Implement ongoing energy efficiency strategy — Implement fee for service arrangements that reduce material inputs and incentivize longevity
27. Insight into water use: can it be done better?	Measure energy efficiency continuously
28. CO2 compensation from Pakhuis de Zwijger	--
29. Train staff (e.g. double-sided printing and less printing)	— Implement, incentive, and encourage users to achieve high rates of product reuse and recycling — Implement ongoing energy efficiency strategy
30. The sustainable connector: full time job	Improve users quality of life
31. Caretaker of worm hotel, roof garden, irrigation, etc (project manager)	Create habitats for animals and insects

TABLE 1 A table showing how the 31 measures align with the strategies defined in the use and operate phase as described in Fig. 6 of Foster's article (2020) with the addition of "Reduction of waste production". Source: Authors. The "use and operate" strategies are derived from Fig. 6 of Foster, 2020

aligns with the vision of the City of Amsterdam, specifically on topics of sustainability, participation and climatic adaptation (Veldpaus and Bokhove, 2019). Hence, best practice cases of adaptive reuse, such as the Pakhuis de Zwijger, are critical for the adaptation and operationalization of the wider HUL approach at smaller local scales, which can be adopted to different contexts to enhance the connection between circularity and sustainable development goals.

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